ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

DEPARTMENT OF PROJECT MANAGEMENT

Assessment of Project Management Critical success Factors in Addis Ababa Integrated Housing Development Project Office

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DECLARATION

I Yidnekachew Haile, declare that this research project, entitled "Assessment of Project Management Critical Success Factors in Addis Ababa Integrated Housing Development office" is my original work submitted for the award of the Master of Project Management degree at the School of Commerce of the Addis Ababa University. It has not been presented for the award of any degree or other similar titles in any other institution of higher learning to the best of my knowledge, and all resources used have been duly acknowledged.

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Advisor: Mengistu Bogale (Phd) Signature _____ Date _____

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ACCRONYMS

APM: Association of Project Management
CC: Critical Chain
CCM: Critical Chain Management
CIDI: Construction Industry Development Institute
CSF: Critical success Factors
IHDPO: Integrated Housing Development Project Office
IT: Information Technology
MSE: Medium and Small-Scale Enterprise
PDRI: Project Definition Rating Index
PIP: Project Implementation Profile
PM: Project Management
PMI: Project Management Institute
TOC: Theory of Constraint
UN-HABITAT: United Nations Habitat

ABSTRACT

There is empirical evidence that project sphere has not been valued appropriately in many organizations because it seems certain that the organization's projects are not unified and consequently spread across several other spheres. However, it is necessary to know the concept of project and project management at the same time are made magnificent in increasingly project-oriented organizations in order to achieve the organizational goals. This study aimed at a better understanding of when and why projects fail or succeed as well as what project management factors are influential. Therefore, an empirical assessment on this topic was performed. Although many studies have explored success/failure factors in projects, a few of them are comprised of the perception that to what extent project's success or failure factors are noteworthy and likewise what really are a successful project and/or a failure project. The study doesn't consider the projects themselves, rather how the office is managing them. Therefore, the rationale of the thesis was on identifying those critical project management practices. As observed from the research, the top management support, project mission, planning, client involvement, trouble shooting, client acceptance, monitoring and feedback and communication are relevant to the office's management practice and have strong association given the current project management practice and performance measurement criteria are traditional in nature. The study was done with a mixed research design and the respondents were selected from the main office of Addis Ababa Integrated Housing Development project office. Both the descriptive statistics and the statistical correlational analysis results shown that the factors identified from literatures were understood and applied by the office to some extent. The gap was seen from understanding the project goal through trouble shooting issues. The result shown that there is strong association within and across variables. The pattern and structure matrix figure were utilized to select the top five critical factors. Accordingly, top management support, personnel, technical tasks, monitoring and feedback and communication were selected as the top five critical factors in the project office.

***Key words**: Critical Factor, Project Management critical success factors, IHDPO*

CHAPTER ONE: INTRODUCTION

1.1. BACKGROUND OF THE STUDY

Housing is a key parameter of measuring development and sustainable development. **Development** as defined by, Todaro (2012), is a process of improving the quality of all human lives and capabilities by raising people's levels of living, self-esteem, and freedom. According to the United Nations Universal Declaration of Human Rights 1948 Article 25 (1): "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, ***housing*** and medical care . . .." This implies that everyone has a right to live in a house that fulfills the minimum standards i.e., the house should be accessible, adequate and furnished with social amenities; like access to safe drinking water, electricity, road, market, school and spiritual and recreational areas and etc.

Poor housing quality and often overcrowded living conditions are the major housing shortfalls experienced by Ethiopia's urban households. An estimated 70–80 percent of the urban population lives in what might be considered slums, according to a commonly accepted international definition, because the units lack durability, adequate space, access to safe water and sanitation, or security of tenure. The main drivers of the urban housing shortage are low incomes, insufficient supply of serviced land, and requirements that housing units meet unrealistically high and costly standards(Hiwot, 2012).

To tackle this overarching housing problems in Addis Ababa government developed an Integrated Housing Development Scheme since 2004. The IHDP has benefitted a very narrow group of beneficiaries with deep subsidies. First, due to large implicit subsidies, the costs of the IHDP units are much lower than those in the private sector. Second, the program has injected a large number of new formal units into the housing stock, thus reducing the qualitative or quantitative housing shortage in urban areas. Nevertheless, having put in place all these instruments, there is also a need for additional tool for addressing the gap between the supply and demand for housing in a proper way. It calls for a housing scheme that addresses the urban poor. In order to fill the huge gap, a cost-efficient house with a better quality and quantity is necessary. The Addis Ababa Integrated Housing Development Project Office has been engaged in the construction of the cost-efficient houses since

2005 with a mission to address the housing problem of the urban poor. In the due course of the construction process, 175,000 housing units have been constructed and transferred to beneficiaries through 11 rounds, skill in the construction sector has been improved, construction management experience in large-scale projects are some of the benefits of this project. However, challenges associated with large- scale housing development hinders the progress of the construction. As Lealem, (2008) opined, Lack of proper institutions, appropriate financial system, legal and technical frameworks, political commitment, among others, can be cited as the causes for not addressing the urban housing problems.

As many researchers in the sector identified, there are many constraints affecting the success of the project as summarized below. The study by Lealem, (2008), UN-Habotat, (2011), Hiwot, (2012), Kidest, (2014), Mahlet, (2016) and Zinabu, (2016),identified and described the following challenges in the Integrated housing development program in general and Addis Ababa condominium housing development projects in particular; There were difficulties completing projects on time, within budget and with full content, There is too much rework activity, Promised lead times are longer than desired, Existing project work is not complete before new projects require a shifting in priorities, Project Managers and Resource Managers have frequent conflicts about priorities and resource commitments, Existing project work is not complete before new projects require a shifting in priorities, Problems in one project cascade into problems in other projects, Some projects are abandoned or completed without the organization gaining the promised benefit and the organization is too slow responding to important opportunities.
These factors could be due to; Inefficient management, inadequate planning and project complexity, change in technological know-how, business environment/geography or project risk, structure, finance/pricing, empowerment in organizations and restructuring, skilled and competent manpower and customers' satisfaction.

Project Management (PM) has gained reputation as a unique management theory used to drive not only business objectives, but also the economic development agenda of developing countries including Ethiopia. Several programs in Ethiopia such as Poverty Reduction Programs, Education Development Programs, Power Development programs, Real Estate Development Programs, Infrastructure Development Programs, Housing Development Programs etcetera, all lay

significant emphasis on the use of projects and project management as a device to augment the rate of success. One of the salient objectives of project management is to contribute to nation building and, in the process, assist in providing shelters to house the various residential, commercial, industrial and recreational activities of its people(Jorge and Mário, 2016). Most clients would be satisfied with work that is superior in quality, gives the most in quantity, cost the least, quick off mark, yields the highest return and easy to build and maintain. Therefore, understanding the values of effective project management to bring about project management success through realizing projects objective within budget, time and quality must be considered as an important tool for successful completion of those condo projects.

The main purpose of this research was identifying the CSFs for improving the technical, institutional and human element of the projects by introducing a paradigm shift from focusing on what is not available to the possibilities within a complex and ever-changing project environment through the application of project management knowledge, skills, tools and techniques.

1.2. PROBLEM STATEMENT

A great number of decisions need to be taken during the project management process and as usual, the decisions at the earlier phases of the design have a bigger impact on the project management practice as compared at later stages or during building operation or construction. If project managers are not aware of the criteria that would influence their goals set from the inception phase then the project will not be successful. CSFs allow companies to implement standard organizational management skills to improve the company and project performance. Rockart (1982) as cited in (Dogbegah, R. et al., 2011) mentioned that to ensure future success, a company and its industry should identify its CSFs. CSFs thus are, for any business, the limited number of areas in which result, if they are satisfactory, will ensure competitive performance of the organization.

According to Walid and Oya Icmeli, (1996), the construction stage is where all the project goals of the contractual parties like time, cost, performance, quality, safety and so on are established and put to the test. The degree of effectiveness of the project management functions and the degree of success of the project goals will determine the degree to which the individual party will perceive the project as being successful from its own viewpoint. Construction industry in all over the world

faces problems of quality, budget and time overrun. Recent technology development in the construction sector reduces the time but failed to expect the perfect estimated time because of onsite and unexpected challenges. Effective project management able to overcome many of the challenges by using knowledge, skills and experiences, etc. from the conception to completion of the project.

Researches conducted in construction sector in Ethiopia in general and Addis Ababa condo housing construction projects in particular concluded that the projects failed mainly because of the problems in supply chain like finance, logistics, skills and so forth by measuring their success using traditional parameters of cost, time and quality. Hiwot, (2012) studied the effect of poor project management in Addis Ababa condo housing projects and concluded that there was technical incapability of MSEs and managerial incapability of both small-scale contractors and MSEs. Besides more constraints related to stakeholder management, culture, material, environment and equipment are identified. Problem in collaborative working atmosphere, lack of construction management practice, lack of quality control practice, lack of strict supervision, lack of testing mechanism, lack of technical and managerial knowhow, lack of equipment support was some of the constraints. Lealem, (2014), assessed the mechanisms of improving the shelter design process for a better Shelter Provision and come up with the challenges in condo housing projects like absence of clear design guidelines, lack of awareness of pitfalls associated with large scale housing development, lack of awareness in participatory planning approach, lack of project management skill, and cost effectiveness in construction. Kidest, (2014) specifically studied the performance of the integrated housing development program against the objectives of employment creation, increased housing delivery and transforming skills. The finding of the research shown that there were problems of managing the program as a whole attributable to poor resource management, poor purchasing and supply management, poor collaboration, poor skill of contractors and small-scale enterprises, poor workmanship, wastage of both material and financial resources (theft, rework, substandard material supply, delay in approval of finance etc.), finally resulted in poor house quality and delay in the construction and transfer of the houses to the beneficiaries. Mahlet, (2016), assessed the quality management practices in Gofa condo housing project and come up with nearly similar failure factors with Kidest like, poor material supply both in terms of quality and timing, poor contractors screening procedure, fixing of profit margins for

contractors by the project office that lead them to employ substandard raw materials and unskilled employees and high expectation of beneficiaries.

However, the literatures shown that all of them were focusing on the potentially existing issues and are lists of external factors that unable to clearly show the CSF/CFs or the degree of relationship with the project management performance and none of them addressed the topic of why these challenges occurred within a project management perspective. As discussed above the modern paradigm of measuring project success is changing from traditional parameters of cost, quality and time to modern parameter of the way the products are delivered as well as the level of end users and relevant stakeholders engagement and satisfaction by the output of the project. Of the identified challenges by researchers, many of them are manageable by the application of modern project management techniques. Finding the critical success factors are important for effective project management. Critical success factors help to find out the areas that should be performed well. These factors act as indicators to measure the organizations performance in project management. The factors are measured, monitored and tracked for performance. Improvements in the critical success factors will give better results in the project management success in construction projects.

Hence, the main purpose of this study was to identify the critical success factors that affect the level of project performance through a project management practice, the extent of relationship between CSFs and project performance and rank those CSFs that will become a gauge by which project managers can evaluate their projects and determine the success of a condominium housing construction projects in Addis Ababa Integrated Housing Development Project Office.

1.3. RESEARCH QUESTION

To help meet the objectives, the study was guided by the following over-arching questions;

1) What are the project management practices adopted by the organization?
2) What are the existing success criteria guiding project performances in the project office?
3) What are the critical factors affecting the project success positively or negatively?
4) What is the relationship between these critical success factors with project performance?

1.4. OBJECTIVE OF THE STUDY

1.4.1. General Objective

The general objective of the study was to assess the critical success factors contributing to project success in Addis Ababa Condominium Housing Projects in the Addis Ababa Integrated Housing Development Project office.

1.4.2. Specific Objectives

- Examined the success criteria of project management and find out the critical success factors of project management in the condominium housing development projects office.
- Ranked the critical success factors of project management and determine the relationship between critical success factors and project performance

1.5. SIGNIFICANCE OF THE STUDY

The study investigated the critical factors affecting condominium housing development project management and how these critical success factors are managed. So that the managerial staffs of Addis Ababa Integrated Housing Project Offices and others under the supervision of the offices can have a clear understanding on the management of critical success factors. It will help the practitioners to select appropriate techniques, tools, appropriate processes and methods for achieving effective project management by prioritizing critical success factors and to ensure completion of condo projects on time, within budget, at acceptable standard that can meet stakeholders needs. The researcher believed that knowledge of best practices (if any) would improve the quality of project management and as a result project success. It will be able to contributes to the body of knowledge on project management best practices and will also able to open a new perspective of understanding projects.

1.6. SCOPE OF THE STUDY

This research focused only on project management critical success factors that directly and indirectly contribute to project success under the Addis Ababa Integrated Hosing Development Project Office, because nearly 18 projects are under construction under the ownership of the office and it has nearly seven supervision and project management offices at every respective project cites. The criterion considered by the researcher to measure project success are directly relevant to the general project management and supervision offices.

1.7. LIMITATION OF THE STUDY

As it was conducted in congested and unfurnished environment, many bottlenecks have been faced during the research. The probability of the occurrence of biases from both the researcher and the respondents, time shortage, and logistics problems as well as the use of small sample size were considered as major.

1.8. ORGANIZATION OF THE RESEARCH

The research project report was organized in five parts. Chapter one covered the introductory part which encompassed background study, statement of the problem, objectives of the study, significance of the study, methodology, scope and limitation. Chapter two comprised of literature review, and quotes the various related works done in this area of study. On its first part a theoretical review will take place about project management and project success and critical success or failure factors in project management and all the important frame works and concepts. The second part of this chapter which is the related literature discussed and reviewed what has been said and researched regarding the focus of this study. Chapter three which is the research methodology part covered research design, target population, sampling techniques, and data collection tools. And chapter four which is data analysis and findings part addressed the findings and analysis from both qualitative and quantitative data collected from the instruments. The last chapter, chapter five covered conclusion and recommendation.

CHAPTER TWO: LITERATURE REVIEW

2.1. GENERAL OVERVIEW OF HOUSING DEVELOPMNT IN ADDIS ABABA

Housing delivery in Addis Ababa in particular encompassed the formal and non-formal sectors. Formal housing refers to housing owned by individuals, private investors and by government and that complies with all legal standards - the land lease law as well as building codes and standards Mathema, (2004) cited by Samson and Alok, (2014). Housing delivery systems under this group include: housing cooperatives, privately owned individual houses, private real estate development, government housing for civil servants and the "newly" initiated "low-cost" condominium housing.

To tackle this overarching housing problems in Addis Ababa government developed an Integrated Housing Development Scheme since 2004. The program has injected a large number of new formal units into the housing stock, thus reducing the qualitative or quantitative housing shortage in urban areas. Out of the projected 50,000 units to be delivered per year, 20,000 would meet the rate of new household formation, while the remainder would go towards addressing unmet demand from the current housing deficit, overcrowding, and dilapidated units in need of total replacement. Nevertheless, having put in place all these instruments, there is also a need for additional tool in addressing the problem in a proper way for reasons that the gap between the supply and demand for housing is so wide. It calls for a housing scheme that addresses the urban poor. In order to fill the huge gap, a cost-efficient house with a better quality and quantity is necessary. The Addis Ababa Integrated Housing Development Project Office has been engaged in the construction of the cost-efficient houses since 2005 with a mission to address the housing problem of the urban poor. In the due course of the construction process, 175,000 housing units have been constructed and transferred to beneficiaries through 11 rounds, skill in the construction sector has been improved, construction management experience in large-scale projects are some of the benefits of this project. However, challenges associated with large- scale housing development hinders the progress of the construction. As Lealem, (2008) opined, Lack of proper institutions, appropriate financial system, legal and technical frameworks, political commitment, among others, can be cited as the causes for not addressing the urban housing problems.

2.2. THE ROLE OF PROJECT MANAGEMENT IN CONSTRUCTION PROJECTS

Project is characterized by a distinctive set of coordinated temporary activities undertaken by an individual or team to meet specific objectives within defined time, cost and performance constraints. Project management can be defined as the planning, organizing, monitoring and controlling of all aspects of the project to achieve the objectives on time and to the specified cost, quality and performance. According to the (P. PMI, 2013) Body of Knowledge (PMBOK), projects, which are temporary endeavors undertaken to meet unique goals and objectives within a defined scope, budget and time frame, typically go through a life cycle. The project life cycle, which is a logical sequence of activities to accomplish the project's goals, is made up of five stages viz; the Project Initiation stage, the Project Planning stage, the Project Execution stage, the Monitoring and Controlling stage, and the Project Closure stage. The actual practice of project management knowledges, skills, tools and techniques applied at every stage of the life cycle(PMI, 2013).

The role of project management is to define the requirements of the work, establish extent of the work, allocate the resources required, plan and execute the work, monitor progress and adjust deviations. It is concerned with identification of the client's objectives in terms of utility, function, quality, time and cost, and the establishment of relationships between resources. Walker A (1984) as cited by (Walid and Oya Icmeli, 1996) concluded that, project management is essential to the outcome of the project because it is the "integration, monitoring and control of contributors to the project and their output, and the evaluation and selection of alternatives in pursuit of the client's satisfaction". Among the various functions of project management in construction projects the planning, implementation, monitoring and control functions have significant role in successful projects.

1. Planning

The planning function of project management involves the preliminary survey of problems and business opportunities, relevant stakeholders and available and potential resources. This function commonly called pre-planning function. According to Yu-Ren and G. Edward, (2008), Pre-project planning is "…. the process of developing sufficient strategic information with which owners can

address risk and decide to commit resources to maximize the chance for a successful project". It is at this early planning stage that significant decisions are made by the project team. How well pre-project planning is performed will affect cost and schedule performance, operating characteristics of the facility, as well as the overall financial success of the project (Yu-Ren and G. Edward, 2008). Inadequate or poor scope definition, which negatively correlates to the project performance, is among the most problems affecting a construction project. The result of a poor scope definition is that final project costs can be expected to be higher because of the inevitable changes which interrupt project rhythm, cause rework, increase project time, and lower the productivity as well as the morale of the work force. Success during the detailed design, construction, and start-up phases of a project highly depends on the level of effort expended during the scope definition phase as well as the integrity of project definition package.

One of the major purpose of the planning process is to evaluate the various views of the vision and work towards that the overall organization understands and agrees to support. Everyone may not agree with the result, but they should agree to work positively towards that agreed upon goal and to understand why that particular choice is appropriate or approved. Failure to go through a planning process would omit his negotiation process and resulting buy-in.

2. Execution

This stage is the stage at which the actual work of the project taking place. It constitutes Work packages, Construction, Commissioning and Start-up(Lutchman, 2011) . The execution stage of a project is the transformation of a theoretical and planned concept into physical and material structures. During this stage, we see the actual site preparation, buildings, equipment, and machinery constructed (systems) and begin functioning to deliver the project objectives. The organizational framework and structure (people) are developed, personnel are hired and trained to operate the project, and adequate systems for managing and operating the project are developed. Also, processes such as procurement (supply chain management), maintenance management, accounting, and marketing are developed to meet the operational needs of the project.

During this stage of the project cycle, the project has the greatest potential for falling off the rails since both schedule delays and cost overruns generally occur in this stage. Adequate controls are required to avoid cost overruns or schedule delays. Both the project cost and the schedule can be

influenced by variables within and outside the control of the organization. Variables that fall within the organization's control include the approach to construction, labor productivity, site policies, safety culture, working conditions and wage rates, personnel turnover, level of training, and working hours, all of which can have a significant impact on the project schedule and budgets.

3. Closeout (Evaluation and Feedback)

Since the condo housing development projects are part of the general housing development program with a huge budget and government commitment, once construction is completed and the project entered the operations phase, performance evaluation and feedback are required to assess the long-term potential of the project. A comparison between actual performances versus planned performance targets should be conducted. These comparisons are performed to determine whether the owner received what was paid for and to assess fitness for service of specific pieces of equipment, processes, systems, and organizational structure as a whole. This step is critical to the long-term success of the project. It is important to note that on schedule and on budget are not the only requirements for a successful project (Lutchman, 2011). Despite successful delivery of a project, in the absence of a capable and strong operating staff with the right processes and control systems in place, the task of achieving project targets becomes infinitely more difficult.

Adequate processes must be in place to ensure that design deficiencies, equipment failure, nonperformance history, and procurement processes are properly documented, captured, and addressed. Here, also, it may be appropriate to realign the organizational structure to ensure best personnel fit in assigned roles. In the simplistic form, this phase of the project cycle allows for a realignment of resources to address those areas of the project that prohibit the project achieving its designed targets(Lutchman, 2011).

2.3. THEORETICAL FRAMEWORKS

2.3.1. PROJECT MANAGEMENT THROUGH THE APPLICATION OF THEORY OF CONSTRAINTS

Whether the organization manages stand-alone or multiple projects, whether those projects are small or large, whether the customers are internal or external, or whether the nature of the work performed is product development, construction, design, IT, or service; most projects are difficult

to manage because of two things: 1) They involve uncertainty, and; 2) They involve three different and opposing commitments: Due date, budget, and content.

In order to make significant and lasting improvements in the way projects are managed, an organization must effectively address the underlying root causes that lead to problems. The dominant root cause in organizations performing multiple projects with shared resources is the unavoidable conflict about when to begin new project work. In almost every organization, there are continual internal and external pressures to address important new opportunities. At the same time, managers recognize that beginning new work too soon may divert needed resources from ongoing project work, compromising their ability to meet existing commitments. Unfortunately, with imperfect knowledge of the true status of current project work, ongoing pressures to increase the organization's output, and a belief that delaying a project's start will only serve to delay its finish, managers all too frequently make decisions that overload the organization(Jacob and McClelland, Jr., 2001).

The root cause that dominates the execution of individual projects is a planning and scheduling process that is based on several erroneous assumptions. One such assumption is the widespread belief that placing protection time in every task will lead to optimized project performance – that good individual task performance will inherently lead to good overall project performance. Couple this with the fact that today's most widely used scheduling algorithms don't provide proper protection for the effects of integrating pathways (many parallel paths of work, all of which must be completed before a common successor task may begin), don't correctly address resource dependencies, and don't properly account for task and iteration variability, and the stage is set for almost certain disaster (Jacob and McClelland, Jr., 2001). These algorithms calculate overly optimistic schedules that will almost certainly throw the project into expensive firefighting once it is recognized that the commitment is in serious jeopardy. Rushed up-front planning aggravates this situation by missing out important task and resource dependencies. Ultimately, firefighting becomes rampant, most people become severely multi-tasked, and management institutes coping mechanisms for more and more tracking of individual task and budget performance – ultimately resulting in more overhead and adding even more "protection time" to task estimates in an attempt to guarantee that people's work will meet management's expectations. The net result is that work that could have been turned in early is not and the project has little chance to take advantage of

any “positive variation.” The effect of late tasks accumulates day-by-day while any potential for early task completion is almost completely masked.

As Jacob and McClelland, Jr., (2001) stated, the TOC Project Management provides a comprehensive solution to address these root causes and coping mechanisms. The solution includes: 1) a robust planning process, 2) a more effective scheduling process, 3) a methodology for introducing work that actually leads to increased capacity, 4) execution processes that provide excellent project control, visibility and decision support, and 5) work behaviors that are more conducive to good project performance. These are identified as the ten critical success factors in project management by many researchers especially Pinto and Slevin, (1986).

As a result of multi-disciplinary nature of project management, a variety of different applications within project management are possible (Azar et al., 2016). The application of the theory of constraints (TOC) to project scheduling led to the development of the “critical chain” technique. The first application is scheduling of a single project to reduce project duration and simplify project control. This is the main theme of the novel Critical Chain. Only towards the end of this novel there is some indication of a further application to allocate resources that are shared by concurrent projects.

In traditional project scheduling the critical path does not take resource availability into account and resources allocation is done as an additional step. The critical chain, however takes resource availability into account to the extent that activities done by the same resource are scheduled in series. To prevent non-critical activities from delaying critical ones, feeding buffers are placed where non-critical path feed into the critical chain from changing during project execution and leads to a rigorous project plan(Azar et al., 2016). CC represents a proven streamlined approach to project planning and execution requires PMs to abandon traditional estimating and project control practices. Management of the CC elements is handled by the use of resource alerts and buffer management for the chain. Implementing these concepts will require a cultural change throughout the organization, beginning with a radical shift of focus from the near-term (task completion dates) to the long-term (final delivery dates). Implementation of critical chain management (CCM) looks at a project in a new light, changing the way projects are estimated, scheduled, executed and controlled. In an ever-intensifying global competitive market, the

management of projects, particularly product development efforts, is increasingly one of the factors that can produce a sustained competitive advantage(Azar et al., 2016). The underlying theme of this model is to complete prioritized projects faster and to make more efficient use of critical resources.

The essential idea is that system outputs are limited by its constraints and the flow of work through those constraints. The management trick in implementing CCM is to identify the constraints and apply the CC logic to them. A CC is then defined as "the chain of the precedence and resource dependent activities which determines the overall duration of the project" Herroelen et al, (2002) cited by (Azar et al., 2016). In the project model view, CCM is defined as groups of dependent tasks that have the potential to constrain the project schedule. In this case, the term "dependent" refers to resources and resource contention across tasks and projects, as well as the sequence and logical dependencies of the tasks themselves Goldratt, (2007) as cited by (Gary L., 2015).

The CCM model focuses on improving work process flow, and it represents an application of TOC principles to project management. In a project, the entire system degrades if any one element on the CC fails to deliver. In a single project, CCM focuses on the amount of time required to complete a "chain" of tasks, whereas in a multi-project view, the model focuses on the collective tasks that most affect the cumulative cycle time of all the projects(Gary L., 2015). The resources involved in these views are known as the organization's strategic or critical resources, also called the "**Drum**" resource. Operationally, CCM manages the Drum resource is "marching through the project to the beat of a drum."

The application of TOC begins from planning stage. Project planning (called Network Building) begins with a combined meeting of project stakeholders to gain complete clarity on the intended objectives, deliverables, and success criteria of the project. This gets everyone on the same page at the earliest possible moment, identifies areas where more definition may be required, and typically prevents mid-project surprises and rework. This session also surfaces any constraints (boundary conditions) within which the project's objectives must be accomplished(Jacob and McClelland, Jr., 2001).

Task, resource, and iteration dependencies are analyzed to determine the longest "chain of work," called the Critical Chain. The process then separates what can be thought of as the "fixed" component of the work from the "variable" component of the work. The fixed component of each task (and each iteration sequence) is the aggressive but possible estimate.

The variable component (also called "safety") is the difference between the aggressive but possible estimate and the corresponding highly probable estimate. This safety is then removed from each task location and aggregated with the safety from other tasks in the same chain of work. A portion of the aggregated safety is placed in strategic locations where it will serve to protect the project as a whole. These placements are called buffers(Jacob and McClelland, Jr., 2001).

A Project Buffer, located between the end of the Critical Chain and the project's commitment date, protects the project from the effects of execution variability along the Critical Chain. Feeding Buffers, located every place a non-Critical Chain task feeds a Critical Chain task, protect the Critical Chain from execution variability along the paths that feed it(Jacob and McClelland, Jr., 2001).

2.3.2. THEORY OF PERFORMANCE MEASUREMENT

Performance measurement is the process of quantifying actions that lead to performance, where measurement is the process of quantifying the efficiency and effectiveness of said actions Neely et al., (1995) as cited in (PMI, 2006),. A performance measure is the metric used to quantify the efficiency and/or effectiveness of actions. If a set of metrics are used it is possible to speak of a performance measurement system. Performance measurement can thus be analyzed at three different levels Neely et al., (1995) as cited by (PMI,2006):

1. Individual performance measure (metric).
2. The set of performance measures (performance measurement system).
3. The link between the performance measurement system and the environment within which it functions.

According to Globerson (1985) cited by (Sui et al., 2013) it is important for every organization to identify and develop a performance measurement system which works as the basis for effective management planning and control. A fundamental part of any evaluation system is to decide which criteria to evaluate establish standards for those metrics and decide how often to measure. According to Martin and Philip Xu, (2017), One way to do this is to develop metrics based on the

company's strategy, so that metrics are introduced that reinforce the importance of the strategic direction of the company, instead of just measuring everything that can be measured. As cited by (Nicholas G., 2012); Hudson et al. (2001) reaffirms the need for companies to align their performance measurements systems with their strategic goals. Simons (1991) argues that performance measurement can be used to steer a company's and individuals' behavior. Measures can be used as a way to supervise, motivate, monitor performance, and influence organizational learning. Simons (1991) also differentiate between interactive and non-interactive measurement systems. In an interactive system top manager use the system to personally and regularly influence Decisions. Simons (1991) argues that through interactive performance measurement systems management can signal to the entire organization how information should be gathered, guide the search for understanding and promote organizational learning. The implication is the need for determining the key issues for success in the management process and the factors or reasons for the emergence of those factors. According to Globerson (1985) as cited in (Nicholas G., 2012) the following guidelines, that have been reiterated by Beamon (1999) and Gad et al. (2004), can be used to select and evaluate a set of performance criteria that reaffirms the need to develop a measurement criteria for the project management issues considered as critical success factors:

- Performance criteria must be chosen from the company's objectives.
- Performance criteria must be possible to compare with other organizations which are in the same business.
- The purpose of each performance criterion must be clear.
- Data collection and methods of calculating the performance criterion must be clearly defined.
- Ratio-based performance criteria are preferred to absolute number.
- Performance criteria should be under control of the evaluated organizational unit.
- Performance criteria should be selected through discussions with the people involved (customers, employees, managers).
- Objective performance criteria are preferable to subjective ones.

2.3.3. THEORY OF PROJECT IMPLEMENTATION

Implementation as Nutt (1996) cited in (Zarina et al., 2014) puts it is a series of steps taken by responsible organizational agents to plan change process to elicit compliance needed to install

changes'. Managers use implementation to make planned changes in organizations by creating environments in which changes can survive and be rooted. As stated in standard quality assurance (SQA, 2007), implementation is a procedure directed by a manager to install planned changes in an organization. There is widespread agreement that managers are the key process actors and that the intent of implementation is to install planned changes, whether they be novel or routine. However, procedural steps in implementation have been difficult to specify because implementation is ubiquitous. Therefore, the project manager has the duty to control the company's resources within time, cost and performance. For some companies, it means manpower, money, equipment (i.e) machine, materials, information and technology, and all these are to be managed by the project manager. The project manager has to devote more time on human, financial, and technical variables as the key to the realization of project implementation(Heagney, 2012).

In organizations that attempt to manage multiple concurrent projects with common, shared resources, the job is even more challenging. Managers can quickly find themselves on "project overload" with continual resource shortages and great difficulty in determining which tasks are truly the most important(Jacob and McClelland, Jr., 2001). This implies the need for prioritization of project management critical success factors for successful implementation of projects.

Many project management models designed for implementation of a project and most of them are for managing dynamic changes in the project environment during implementation. (Pinto and Slevin, 1986), designed models for measuring project management success based on Operations Research and Management Science models. One important result of much of the research on implementation has been the development of a complex model of implementation success. It may be shown that in many ways, measures of project and implementation success parallel and complement each other. As a result, they suggested that a synthesis of the measures of success in these two fields has the potential to present a more accurate, comprehensive, and useful model of project success than those that have been incorporated in much of the project management field to date. Accordingly, first a project success incorporates technical validity which consists of an assessment of whether or not the project works has been accomplished as it is intended to work. It may be seen as the first hurdle for the project organization. They must construct or create a project that "works;" in effect, that does what it is purported to do. If the project is not technically valid, the rest of the implementation process may be considered a waste of time and the project is either terminated or sent back to R&D for further development. Second, Organizational Validity, it is an

important consideration that measures whether or not this project is “right” for the clients for whom it is intended. Is the project compatible with the needs of the user organization? It tests the question of whether or not the project will be used by the clients for whom it is intended. If the project is not organizationally valid; that is, if it does not deal with the clients' specific concerns, it will not be used. Further, organizational validity argues that the project manager must become involved in “selling” the final project to the clients. An organization may consider a project a success because it has passed all other cost and schedule criteria laid out for it, but if the final project is not used by the clients, that implementation effort is viewed as a failure. The final circle to be considered in assessing project success is that of Organizational Effectiveness. Organizational Effectiveness is concerned with determining whether, Once the new project has been given to the clients and is being used, it is contributing to an improved level of organizational effectiveness in the client's organization. In other words, whether or not it is having a positive impact on the firm making use of it (Pinto and Slevin, 1988).

2.4. PROJECT SUCCESS AND PROJECT MANAGEMENT SUCCESS

Project success is a topic that has been investigated intensively in the project management research literature throughout the years. As researchers’ understanding of project success has developed and grown, there is an increasing consensus of the complexity and ambiguity that surrounds project success. Since projects are temporary in nature, the success of the project should be measured in terms of completing the project within the constraints of scope, time, cost, quality, resources, and risk as approved between the project managers and senior management. Project success should be referred to the last baselines approved by the authorized stakeholders(PMI, 2013).

Historically, studies on project success started in the mid 1900’s and its attributes are being equated to Cost, Time and Quality. For over 50 years, project success has become inextricably linked with the Iron Triangle of Cost, Time and Quality (Sukhoo, A et al., (2004), Walid and Oya Icmeli, (1996)). According to (Craig, 2013), for those 50 years, projects have continued to fail in their efforts to achieve the Iron Triangle. (Chan et al., 2009)observed that since the 1950’s it was assumed that the development of better scheduling techniques would result in better management and thus successful completion of projects. (Roque and Marly, 2013) concurs that the traditional

view for project success is to deliver projects on time, in budget and to scope. These authors agree that most of the early studies assumed that if project completion time exceeded its due date, or expenses overran budget or outcomes did not satisfy a predetermined performance criterion the project was assumed to be a failure.

As Chan et al., (2009) point out that, researchers inclined to oversimplify the client's role. Pinto and Slevin, (1987)advocated project success not only evolves from technically correct project but also effectively interfacing with clients and stakeholders. According to Zarina et al., (2014) apart from client and contractor, other stakeholders may affect the outcome of the project. Truman (1986) as cited by (Chan et al., 2009) points out that the terms of cost, schedule and technical objectives is an outdated belief as there the need, concerns and issues from the diverse mix of the project stakeholders.

There is no consistent interpretation of the term "project success". However, it is important to make the distinction between project success and project management success. According to Martin and Philip Xu, (2017), Project success is the fulfillment of stakeholder expectations by the final product and project management success is the project process' accomplishment of cost, time and quality objectives. But we are all familiar with many numbers of projects that came in on time and under budget and were considered failures. On the other hand, many examples exist of projects which finished late and far over budget and were hailed as successes. Project managers can often describe cases of "successful" projects which have been poorly received by the intended clients and used well below capacity. Still other examples exist of projects which, when first installed, were initially perceived as failures but over time have come to be viewed as major successes. Project success tend to be long-term nature oriented towards the expected total life span of the completed projects while in contrast, project management success is oriented towards planning and control in the context of the short-term life of the project development and delivery.

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be shown that in many ways, measures of project and implementation success parallel and complement each other. As a result, they suggested that a synthesis of the measures of success in these two fields has the potential to present a more accurate, comprehensive, and useful model of project success than those that have been incorporated in much of the project management field to date. Accordingly, Pinto and Slevin (1987) stated that, a project success first incorporates technical validity which consists of an assessment of whether or not the project works has been accomplished as it is intended to work. It may be seen as the first hurdle for the project organization. They must construct or create a project that "works;" in effect, that does what it is purported to do. If the project is not technically valid, the rest of the implementation process may be considered a waste of time and the project is either terminated or sent back to R&D for further development. Second, Organizational Validity, it is an important consideration that measures whether or not this project is "right" for the clients for whom it is intended. Is the project compatible with the needs of the user organization? It tests the question of whether or not the project will be used by the clients for whom it is intended. If the project is not organizationally valid; that is, if it does not deal with the clients' specific concerns, it will not be used. Further, organizational validity argues that the project manager must become involved in "selling" the final project to the clients. An organization may consider a project a success because it has passed all other cost and schedule criteria laid out for it, but if the final project is not used by the clients, that implementation effort is viewed as a failure. The final circle to be considered in assessing project success is that of Organizational Effectiveness. Organizational Effectiveness is concerned with determining whether, once the new project has been given to the clients and is being used, it is contributing to an improved level of organizational effectiveness in the client's organization. In other words, whether or not it is having a positive impact on the firm making use of it (Pinto and Slevin, 1988). Baccarini, (2003) highlighted the following characteristics of project and PM success;

Project Management Success is subordinate to Product Success - The project management success criteria of time, cost and quality are subordinate to the higher product success objectives of goal and purpose. Consequently, a project that is a project management failure is perceived as a project success because the higher- level objective of product success is met.

Project Management Success Influences Product Success **-** Project management success can influence the achievement of product success. Good project management can contribute towards product success but is unlikely to be able to prevent product failure. For example, project management may help to identify the unfeasible nature of the project and indicate that it should be abandoned or change. Poor project management in terms of cost and/or time overruns may result in the non-attainment of product success such as profitability or market share.

Project success is affected by time – For product success, judgment can only be made once the project's product has been utilized and this can be many years after the project's completion. For project management success, judgment of whether a project has successfully met the objectives of time, cost and quality is a short-term measure made during or at completion of the project. Judgment of whether a project has been conducted in a quality manner and has successfully met the needs of the project team.

The PMI Guide (2013) states that to ensure project success, stakeholders should be identified and their needs and expectations are determined, influenced and managed. (APM, 2015)agrees and defines project success as "The satisfaction of all stakeholders". (Hamed and Abolfazl, 2016) states that project success also include ensuring that the stakeholders are happy. (PMI, 2013)used the term to meet customer expectations.

Time: All projects are constrained to a time frame during which they are to be completed. No projects are intended to continue forever. Thus, one of the basic requirements that control project management and determine its success is whether it is completed on established schedule (Pinto, 2013).

Cost: All projects are constrained to a limited budget; no company has unlimited resources to spend on projects. Project also compete for resources between each other. In order to use resources efficiently projects must adhere to approved budget. Thus, the second requirement that control project management is whether it is completed within budget guidelines or not (Pinto, 2013).

Quality: All projects are produced to meet to some form of technical specification determined at project initiation. Thus, measuring success equals determining to what extent the project fulfills the specification (Pinto, 2013).

Pinto and Slevin, (1986) observed that project managers are constrained either by company policy or personal rule of thumb to resort to simplistic formula in rating project success or failure. It may be shown that in many ways, measures of project and implementation success are parallel and complement each other. Consequently, Pinto and Slevin (1986) suggested that a synthesis of the measures of success in the fields has the potential to present a more accurate, comprehensive, and useful model of project success. It seems that the definition of project success is quite illusive.

2.5. PROJECT MANAGEMENT SUCCESS CRITERIA & SUCCESS FACTORS

Having established the distinction between project management success and project success it is necessary to elaborate further on how project management success is measured. As mentioned earlier project management success is measured according to the traditional "iron-triangle" of time, cost, and quality. Project performance targets are tied with the scheduling and control of projects activities in a well-coordinated, time and cost-effective manner, so that projects can be fulfilled within the preplanned scope of the project. This highlights the significance of understanding and achieving the project goals, and a project is a means to achieving those goals. With regard to the importance of projects management performance and concept, the project management is defined as the process of controlling the achievement of the project objectives by applying a collection of tools and techniques(Hamed and Abolfazl, 2016). As Pinto and Slevin,(1988) opined, it is important to differentiate between success criteria and success factors. Criteria are used to measure success whilst factors facilitate the achievement of success. According to Baccarini and Collins, (2004). Project success criteria consists of two components – product success and project management success:

Project Management Success - This focuses upon the project process and has three criteria:

- Meeting time, cost and quality objectives
- Quality of the project management process
- Satisfy stakeholders during project management process (primarily sponsor and project team)

Product Success - This deals with the effects of the project's final product and has three criteria:

- Meeting the project owner's strategic organizational objectives (goal)
- Satisfy users' needs (purpose)
- Satisfy stakeholders where they relate to the product (primarily customer/user)

As long as the project managed and final result are in adequately interrelated together, the success of the project has often been associated with final result of the project and project success criteria but, there has not been a concept can have defined how they can link and affect each other. A project, typically is perceived as a set of activities coupled with exact precedence interferences among those activities(Sui et al., 2013). Steinfort and Walker, (2007) investigated the factors of projects success, success in project in project management and factors of continual success of project realization citing the omission of human factor as the only possible omission in their research.

Atkinson (2006), cited by (Chan et al., 2009), separates success criteria into delivery and post-delivery stages and provides a "square route" to understanding success criteria: iron triangle, information system, benefit (organizational) and benefit (stakeholder community). The 'iron triangle', has cost, time and quality as its criteria (for the delivery stage). The post-delivery stages comprise: (i) the information system, with such criteria as maintainability, reliability, validity, information quality use; (ii) benefit (organizational): improved efficiency, improved effectiveness, increased profits, strategic goals, organizational learning and reduced waste; (iii) benefit (stakeholder community): satisfied users, social and environmental impact, personal development, professional learning, contractors' profits, capital suppliers, content project team and economic impact to surrounding community. This model takes into consideration the entire project life cycle and even beyond. It thus lends itself for continuous assessment.(Chan et al., 2009).

Chan Chan et al., (2009) also modelled project success measurement into 'micro viewpoint: completion time, completion cost, completion quality, completion performance, completion safety; and macro-viewpoints: completion time, completion satisfaction, completion utility, completion operation. A key feature of this model is that it proposes only lagging indicators and gives no room for continuous assessment and monitoring. Patanakul and Milosevic (2002) as cited in (Shahrzad and Hamidreza, 2011) , grouped their measurement criteria into three: (i) criteria

from organizational perspective: resource productivity, organizational learning (ii) criteria from project perspective: time-to-market, customer satisfaction and (iii) criteria from personal perspective: personal growth, personal satisfaction. Chua et al. (2004) cited by the same article proposed a hierarchal model for construction project success. In this model the objectives of budget, schedule, and quality are key measures that contribute to the goal of "construction project success". Sadeh et al. (2007) as cited in (K Aneesha, 2017), divided project success into four dimensions: 1) meeting design goals, which applies to contract that is signed by the customer, 2) the benefit to the end user, which refers to the benefit to the customers from the end products, 3) benefit to the developing organization, which refers to the benefit gained by the developing organization as a result of executing the project, and 4) the benefit to the technological infrastructure of the country and of firms involved in the development process. Walid and Oya Icmeli, (1996) refers success factors as the management inputs and systems that would lead to project success. Steinfort and Walker, (2007) refers success factors as the organizational areas which he terms as the "How". Steinfort and Walker, (2007) is simpler in their identification of the two components of project success terming them as the "What" and the 'How". He postulates that for a project to be successful it has to identify and focus on: firstly, the result areas that is the success criteria which he terms it as the "What" and secondly, the organizational areas that is the success factors which he terms it as the "How". Graphically this is shown in Figure 2.

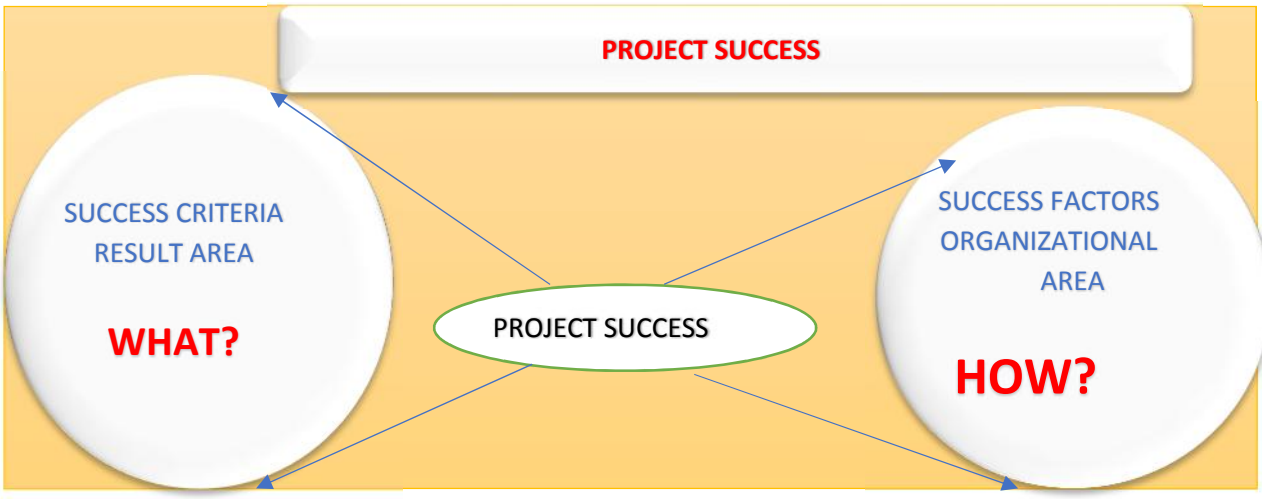


Figure 1: The "WHAT" and the "HOW" in Project Success (Source: (Steinfort and Walker, 2007)

Steinfort and Walker, (2007) concludes that for projects to be implemented successfully, the two components of project success must be clearly defined, agreed and progressively reviewed by all parties. These two components are the project success criteria relating to users and sponsors and the project success factors that are required to deliver those success criteria. They constructed a model that link all the variables of project success which they demarcate as success criteria and success factors in one coherent model which they called the Project Excellent Model as shown in Figure 2**.** The model consists of six result areas covering project success criteria and six organizational areas covering critical success factors.

The project excellence model shows the broad and narrow perception of project success criteria (Result areas) and critical success factors (Organizational areas). The model shows that the narrow concept of project success criteria being the triple objective of time, cost and quality could be achieved by the narrow concept of critical factors of project management which only encompass scheduling, budget, organization, information, risk and quality. The model attempts to show that both the broad and narrow concept of success criteria could only be achieve if the critical success factors also include leadership & team, policy and strategy, stakeholder management, resources and contracting.

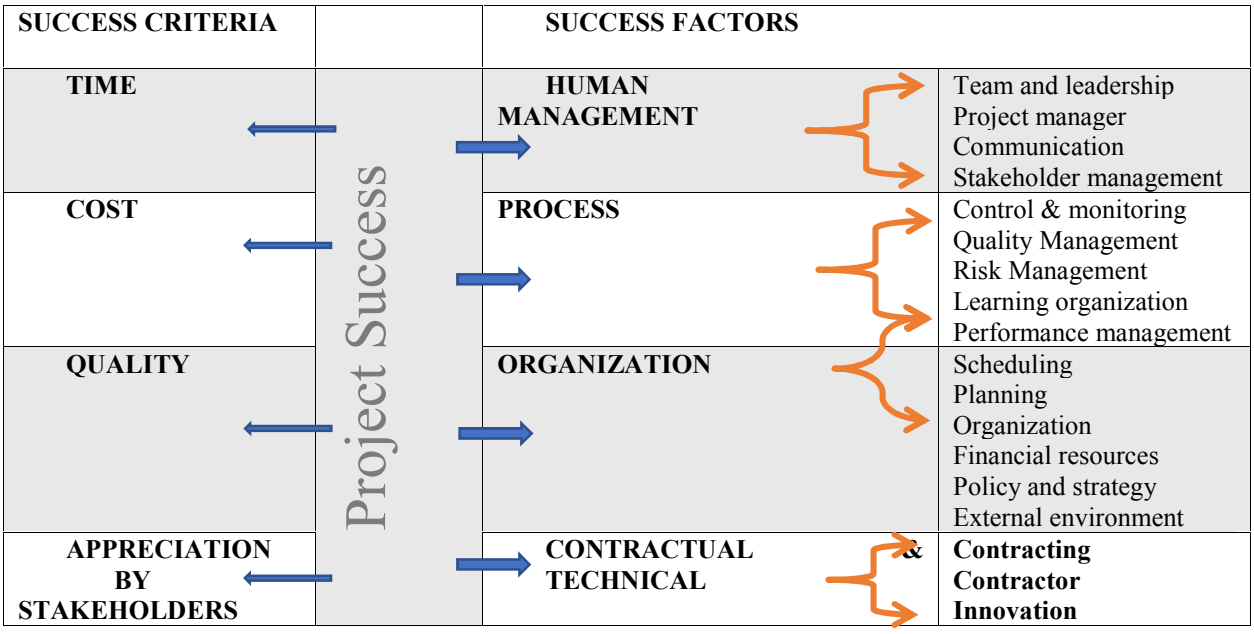


Figure 2: Success Criteria and Success Factors (Source: Steinfort and Walker, (2007))

2.6. PROJECT MANAGEMENT CRITICAL SUCCESS FACTORS

Critical success factors are those few things that must go well to ensure success for manger or and organization, and therefore, they represent those managerial or operating activities and future success. Therefore, a project can be successful even when managed badly and can fail even though it was managed in a well manner and appropriately. Nevertheless, for some researchers opined that management is the key to a successful project. Accordingly, it is necessary to evaluate behavior and technical skills, potential for leadership, personal strengths and weakness and experience, because they strengthen the chance of better management performance(APM, 2015)

Critical success factors (CSFs) are inputs to project management practice which can lead directly or indirectly to project success. It encompasses many elements, which have to be synchronized to ensure the project delivery on time. From a Project Management perspective, critical success factors (CSFs) are characteristics, conditions, or variables that can have a significant impact on the success of the project when properly sustained, maintained, or managed (Derrick Chukwuemeke, 2011).

In addition, several studies addressing CSFs have observed the impact of context on which factors are considered most critical as well as whether certain CSFs are indeed related to success. As (Wan Maimun and Ahmad, 2006b) opined, in most construction companies, management activities in construction project can be a better understanding by exploring the critical success factors (CSFs) for improving the performance of their building projects. Most of the studies only emphasized the critical project attributes unique to green building projects, such as early involvement of the project team members and integrated project delivery methods, which are usually not identified as important success factors for improving project performance in terms of cost, time and quality by most previous researchers.

The project manager needs to know what factors are critical to successful project implementation. These factors should be sufficiently broad that they encompass important aspects of organizational and managerial behavior and sufficiently precise that they provide real guidance for the practicing project manager. This model should provide the basis for the monitoring, anticipating, and resource allocating functions faced by the project manager. In addition, it would be ideal if a diagnostic device were available to project managers so that they could, in some numerical fashion, assign scores to critical success factors and track them over time. This would permit managers to

better allocate their time and resources across diverse factors, making sure that all critical success factors are attended to (Pinto and Slevin, 1986). Various researchers identified nearly similar project management critical success factors. Among them the researcher summarized the following that have direct relationship with construction projects.

Table: Summary of Literature Review

Lists of critical success factors developed in the literature tabulated by the auther							
S.No.	**Randall L. Schultz and Dennis P. Slevin, (1984)**	**K Aneesha and M K Haridharan 2017 Construction**	**APA Frmework (BMG 2014) General**	**Paulinus Woka Ihuah a, Iyenemi Ibimina Kakulu b, David Eaton 2014 for Housing Construction**	**Ioana Beleiu, Emil Crisan & Razvan Nistor, 2015**	**Fortune and White, (2006)**	**Paulo Cesar Felix Osorio, Osvaldo L G Quelhas, Luis Perez Zotes, Eduardo Shimoda & Sérgio França 2014 Energy Sector**
1	Project Mission	Top Management Support	Effective governance	Top management support	Owner involvement within the project	Support from senior management	Support from upper management
2	Top Management Support	Monitor Performance and Feedback/Systematic control over project execution	**Competent project teams**	Adequate project Monitoring and Feedback	Timely and comprehensive control	Good communication/ feedback	Clear and realistic goals
3	Project Plan	Competent Project Team	**Aligned supply chain**	Project team competency	Competent project team members	Competent Project manager	Detailed and up-to-date Project Plan
4	Client Consultation	Problem Solving Abilities	**Project planning and review**	Realist project Cost and Time estimates	Accurate schedule and plan	Detailed plan kept up to date	Efficient communication channels and system
5	Personnel	Realistic Cost and Time Estimate	**Capable sponsors**	Project Risk Management	Ability to handle unexpected problems/Adequate risk management	User/client involvement	Involvement and commitment of stakeholders
6	Technical Tasks	Management of Risk	**Goals and objectives**	Local building Materials and increasing cost	Communication and consultation with stakeholders	Skilled/ suitably qualified/ sufficient staff/team	Effective control of changes
7	Clint Acceptance	Communication/Effective communication between stakeholders	**End users and operators**	End user's involvement and other issues	Adequate use of technical skills	Effective monitoring/ control	Availability of information on the history of previous projects
8	Monitoring & Feedback	Detailed plan in design and construction/Well-laid out specification	**Secure funding**	Project Team composition	Clearly defined roles and responsibilities/	Adequate budget	Adequate organizational structure
9	Communication	Client involvement	**Commitment to project success**	Project Mission/common goal	Provision of timely data to key players	Project sponsor/ Champion	Effective process for hiring suppliers
10	Trouble Shooting	Clarity of Project goals/Project understanding/Clear and Realistic objectives	**Supportive organizations**	Project Information and Communication	Stakeholders satisfaction	Good leadership	Qualified project team and management
11		Project manager competence	**Appropriate standards**	Adequate Project fund and resources	Experience and expertise of the project manager	Clear realistic objectives	Adequate project management tools and methodology
12		Adequate Budget	**Proven methods and tools**	Project Leader stability	Sponsor involvement within the project	Correct choice/ past experience of project management methodology/ tools	Project size and complexity
13		Project Manager Technical Capabilities			Synergy of the team	Environmental influences	Experienced and competent project team
14		Project manager commitment towards goals			Clearly defined goals and directions	past experience (learning from)	Experienced and competent project manager
15		Project Participants commitment towards goals			Adequate use of project management techniques		Clearly defined and detailed scope
16		Good Leadership			Compliance with the planned budget, time frame and performance criteria		Sufficient and well-allocated resources & Realistic budget
17		Project Management Methods and tools					Realistic timeline
18		Complete the project according to the requirement					Effective risk management & Effective project monitoring and control

Source: Researcher's Literature review Summary

Pinto and Slevin, (1986) identified ten critical project management success factors related to successful implementation of numerous types of projects that are repeatedly considered by many researchers as a whole or partly. These are Project Mission, Top management support, Client consultation, Technical Tasks, project schedules/plans, client acceptance, monitoring and feedback, communication, trouble-shooting, and characteristics of the project team leader. These 10 factors form the basis for the diagnostic instrument for measuring relative strength of each factor of the project implementation profile (PIP): the factors as defined by themselves in order of importance and basic arguments for considering the specific critical factor are provided below;

1. **Project Mission.** As Pinto and Slevin, (1986) defined refers to initial clarity of goals and general directions. This factor was related to the underlying purpose for the implementation – its importance is clearly defined goals at the initial stages of a project. It answers the questions of; Are the goals clear, and can they succeed? Project mission has been found to refer to the condition where the goals of the project mission has been found and understood? etcetera.
2. **Top Management Support.** Refers to willingness of top management to provide the necessary resources and authority/power for project success. Schultz and Slevin (1986) noted that management support for a project or any form of implementation has long been considered of great importance in distinguishing between their ultimate success or failure. Senior management must understand enough of the ongoing situations to judge how to support the effort from the enterprise view-point. This does not always mean to continue funding a project, but it does mean that they have a role in deciding when and how to support the effort.
3. **Project Schedule/Plan.** A detailed specification of the individual action steps required for project implementation. It refers to the developing of a detailed plan of the required stages of the implementation process. Pinto and Slevin (1989), has drawn parallels between the stages of the implementation process. The first step in the moving stage. In the project implementation profile (PIP) model, project schedule/plan refers to the degree to which time, schedule, milestones, manpower and equipment requirement are specified.
4. **Client Consultation**. Communication, consultation, and active listening to all impacted parties. The need for client consultant has been found to be increasingly important in attempting to successfully implement a project. For instance, Anyanwu (2003) as cited by

(Pinto and Slevin, 1986) found that the degree, to which clients are personally involved in the implementation process, will cause a great variation in their support for that project. Anyanwu (2003) as cited by (Pinto and Slevin, 1986) also viewed client consultant as the first stage of a program to implement change. It is often required throughout the life cycle of the project Schultz, (2011), Pinto and Slevin (1987) warns that: it would be dangerous for the project manager to assume that since client consultant was satisfactory at an early stage, this activity could be ignored for the remainder of the project. Regardless of the structure selected, failure to achieve user involvement through the life cycle will almost surely doom the effort to less than desirable results.

5. **Personnel.** Recruitment, selection and training of the necessary personnel for the project team. The view is that the most important assets in the building up and efficiency of any organization, be it private or public, depends to a large extent upon how effectively human resources (personnel) are utilized. (Pinto and Slevin, 1987). However, an unfortunate situation could develop, personnel for the project team are chosen with less-than-full regard for the skills necessary to actively contribute to the success of implementation. Managing people and work process is a different skill and mindset than doing technical work.
6. **Technical Tasks.** Refers to availability of the required technology and technical steps to accomplish the specific technical action steps (Heagney, 2012). In the words of (Pinto and Slevin, 1987), Technical task refers to the necessity of not only having the necessary personnel for the implementation team, but ensuring that they possess the necessary technical skills and have adequate technology to perform their tasks. The business side should view their primary responsibility as the “what” of the project while the technical participants should be held responsible for the detailed” how”.
7. **Client Acceptance.** The act of “selling" the final project to its ultimate intended users. Acceptance is a stage in project implementation that must be managed like any other factor(Pinto and Slevin, 1986). The obvious bottom line question for determining whether or not a project is successfully implemented is, "Has the client bought it?" This must be asked whether the client is internal or external to the organization. Too often managers make the mistake of believing that if they handle all the other steps well, the client will automatically accept the resulting project. The truth is, client acceptance is a stage in project implementation that must be managed like any other.

8. **Monitoring and Feedback**. Timely provision of comprehensive control information at each stage in the implementation process(Pinto and Slevin, 1986). This refers to the project control process by which at each stage of the project implementation, key personnel receive feedback on how the project is comparing to initial projection. Making allowances for adequate monitoring and feedback channels between the model builder and user.
9. **Communication.** The provision of an appropriate network and necessary data to all key actors in the project implementation. The need for adequate communication channels is extremely important in creating an atmosphere conducive enough for successful project implementation. Communication as (Pinto and Slevin, 1987) opined is not only essential within the project team itself, but between the team and the rest of the organization as well as with the client.
10. **Trouble-Shooting.** Ability to handle unexpected crises and deviations from plan. Regardless of how carefully the project was planned initially, it is impossible to foresee every problem arising from the organizational environment Pinto and Slevin (1986). It was cautioned that each team should obtain technically competent people with the specific assignment to deal with problems when and wherever they arise, and to foresee, and possibly forestall potential trouble areas in the implementation process.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. RESEARCH DESIGN

A mixed methods/approach underpinned by a post-positivist research philosophy, using predominantly qualitative methods with some quantitative elements was employed for this research. The quantitative approach provides the overall picture of the phenomenon and the qualitative aspect provides support for interpretation of the results and answers to some of the research questions (Creswell, 2009). To accomplish the objectives of the research both qualitative and quantitative research design were employed as it is an approach to inquiry that combines or associates both qualitative and quantitative forms. A qualitative design is useful when as the "researcher attempts to derive a general, abstract theory of a process, action, or interaction grounded in the views of participants in a study" (Creswell, 2009).

As the issue was very specific, it required some descriptions about the experience of the officers in identifying critical success factors in project management. Therefore, in order to improve the project performance, it is essential to determine the critical success factors in the current project management practices and their relationship with project performance. In order to achieve this, the variables for project success were identified and established from literatures for achieving the objective of this study.

3.2. POPULATION

The population consisted of Addis Ababa Integrated Housing Development staffs who deal directly with Condo housing projects development. The contract administration staffs are 15 in number composed of civil engineers, architects, accountants, construction managers with design, consulting, financial appraisal and supervisory roles of which 13 staff members were randomly chosen and questionnaires were distributed. Off them only 12 respondents returned the questionair accounting 92% and only one of the returned survey questionnaire was rejected because of incompleteness. Therefore, only 84% of the responses were used for analysis.

3.3. SAMPLING TECHNIQUE

The sample size was made up of individuals who are working on Addis Ababa Condominium housing projects and who had some relationship with project implementation. Sampling is the

process of obtaining information about the entire population by examining only part of it (Kothari 2007). The sampling procedures are methods that are used to select an element from the population that was included in the sample. The sampling design used for this study was simple random techniques. Random sampling is the purest form of probability sampling. Each member working on this office had an equal chance of being selected. Purposive sampling was used to sample condo housing development contract administration staffs who design, consult, supervise and manage specific projects. The number of staff member are 15, 86.7% of these individuals (13 individuals) with various technical background and different roles were randomly chosen and survey questionnaires distributed. According to Mugenda and Mugenda, (2003), a random sampling technique allows a researcher to use cases that have the required information with respect to the objective of the study.

3.4. TYPES OF DATA COLLECTED

Both primary and secondary data were collected and analyzed. The questionnaires were distributed to the total sample of 13 respondents based on random sampling techniques of probability sampling. Of them 12 are collected and analyzed. There were unstructured group discussions with the team leaders of the contract administration office and the communication department officers with regard to specific subjects. In addition to the primary data, the researcher gathered secondary data from books, manuals, journals, reports, and research papers and in various website. The main sources of secondary data were project management process manuals, books, journals, reports, research papers and various web sites.

3.5. METHOD OF DATA COLLECTION

A questionnaire was designed with the objective of ranking the important factors for achieving successful projects. The analysis of data from the questionnaires responses can provide precise data from which tables can be produced. Semi-structured Interview was conducted to the target group of main players in the design and construction stages of the projects in organizations such as the project managers, contractors, consultants, site managers, and architects.

3.6. METHOD OF DATA ANALYSIS AND INTERPRETATION

Data analysis is a practice in which raw data is ordered and organized so that useful information can be extracted (Borg, Gall and Gall, 2007). Quantitative data was analyzed using descriptive

statistics; specifically, percentage, variance, range and mean. As the research design is mixed quantitative data were analyzed using Statistical Software for Social Science (SPSS) and the findings were interpreted. The tool used to achieve the relationship between the critical success factor and project performance in this study was analyzed using correlational analysis. Before detail statistical analysis was done to establish whether there is any relationship between the variables, the researcher tested the reliability of the measures using ANOVA with Cochran's Chi-square Test the as prescribed by various scholars for such categorical variables (Faraway, 2002; Cohen, West & Aiken 2003). The result shows the measure is reliable because the interclass correlation Chai-square test result is greater than 0.7%

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Inter-Item Correlations	.295	-.648	1.000	1.648	-1.544	.088	100

Intraclass Correlation Coefficient

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.095[a]	.044	.257	11.506	10	990	0.000
Average Measures	.913[c]	.821	.972	11.506	10	990	0.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1. GENERAL CHARACTRISTICS OF RESPONDANTS

This part of the report encompasses the age, educational level, work experience and additional trainings that the respondents have got. This data was considered to assess whether the staff's resource capability is adequate enough to manage such complex projects. As the survey revealed among the respondents 76% of them have first degree and got relevant project management trainings like construction management, project cost management, project time management, project quality management and project management software. The remaining percentages of the respondents have diploma and haven't got relevant project management trainings. 71% of the respondents are between the age of 25 to 40 and have experience of 2-10 years and the remaining 28% of the respondents are above 50 Years old and have experience of greater than 20 years.

4.2. PROJECT MANAGEMENT PRACTICE ADOPTED BY THE OFFICE

The Addis Ababa Integrated Housing Development Project Office is established based on the 2005 national urban development plan that adapts the united nations 2020 objectives of improving the life style of citizens and making urban areas free from substandard houses. The program envisioned to improve the housing condition in Addis Ababa and creating job opportunities to urban dwellers through creating and supporting medium and small-scale enterprises so as to enhance the construction skills pill-over over time. In addition to that the program is tasked with supporting the women, disables, and the jobless sect of the city.

To realize the objectives of the program government provides land, infrastructures, finance, construction skill development trainings, trainings on saving, on utilization of least cost technologies, and etc.

As observed from the office's publications, work manuals, unstructured interview with the construction and contract administration department officers, the common project management practice adopted in the office is the traditional way of project contract administration. The project office is designed with 10 sub-city level branch offices with 5,000 construction capacity annually so as to construct 50,000 houses per year. It has more than 2,100 staff members, 1,500 small and medium enterprise and 31 consultants. However, the performance of branch office are constrained by many internal and external factors to be successful in the project delivery.

The project office designs all the typologies by incorporating various types of relevant design and architectural consulting firms and individuals for all to be built projects. After the approval of the design and necessary resources, the project office channels the task to the relevant department in the project office which is the construction and contract administration department. The department selects contractors, recruits them and administer the contractual issues asper the regulation of the office, approve payments based on their supervision, conducts a research on price adjustments and implements after approval. In addition to that it is also responsible for selection and implementation of least cost technologies. The contract administration process before 2001 GC was both fixed unit price approach and contractor's price approach. The rational to employ this approach was to minimize cost and time as well as to properly control the project budget. After evaluation of the impact of the approach implemented, the office changed to three-partite agreement approach where the office's engineering consultant issues the contractual agreement award to the contractors and SMEs interact directly with contractors. As a result, currently, the office intervenes only on the supply of main materials like metallic products to the contractors and the remaining materials are supplied by creating market linkage with SMEs.

The staff members of both the main office and in the branch, offices are selected and recruited as per the normal recruitment and selection procedures, this implies there is no project characteristics even though the office is project based.

Communication is made between the project office and stakeholders through weekly site visit from the project office, monthly reporting and peer evaluation on quarterly basis. The peer review team includes; the deputy Mayor of the city, the chief executive officers of main infrastructural departments of the city like; the Addis Ababa Road authority, Water and Sanitation Authority, Commercial Bank representatives, and other stakeholders of the project. This implies there is good intuition on the involvement of key stakeholders' communication.

As quality control practice in the project office is practiced in the form of assigning one subject matter specialist in each branch office and one supervisor from the main office. The inspection process assisted by the office's engineers both in the main office and in the branch. There is also a minimum of one external consulting firm in each project for the quality control and inspection activity.

4.3. SUCCESS CRITERIA CONSIDERED BY THE OFFICE

The program is designed mainly to solve the existing and ever-increasing housing supply shortage. In addition to that it is also tasked with creating and bridging the gap of employment opportunity shortages in line with improving the construction skill gap in the nation. Mostly success criteria are determined by the main development objectives of programs and projects. The Addis Ababa Housing Development project Office has identified the following as success criteria in addition to building 50,000 houses per year which are measured in quantitative and qualitative terms. Construction of one block within 10 months, Use of least const technologies, Partial prefabrication of building elements, Labor intensive construction system to create job opportunity, Building element produced by MSEs , Engage large number local middle level contractors and consultants, Introduce cost saving construction materials and technology, Apply bulk purchase techniques to save costs, Sales of Government Bonds to avail money for the construction, Beneficiaries save and pay 10/20 % of the cost up on delivery of the houses, The remaining percentage shall be paid with bank loans between beneficiaries and local banks (facilitated by the government). Thus, the scheme is financially sustainable and Cross subsidy is also used by selling shop units on ground floors of the buildings to the private sector.

4.4. DESCRIPTIVE INTERPRETATION OF RESULTS

This section describes the findings from the survey and interviews conducted with selected team members. The analysis was done with simple mathematical metrics using SPSS.

4.4.1. Project Mission

The descriptive analysis shown that at average most of the respondents (47.295) agreed and (10%) of them strongly agreed that they are clear with the project goal, the result will benefit the organization, they are aware of and can identify the negative consequences of not achieving the project, upper management and the team also share the goal and have involvement, they are enthusiastic of successful completion of the project, the goals are not contradictory and achievable. Whereas 26.36% of them disagreed with this and the remaining 11.8% are neutral. This implies there is adequate level of understanding on the need for project mission on the successful implementation of projects.

4.4.2. Top Management

The other main component was top management support. From the data, the researcher observed that, majority of the respondents disagreed that top management understands the amount of resource needed, they are providing regular feedback, issuing their support in need, agreeing on their authority on the project, on their responsiveness for additional resource need, sharing responsibility for project success, recognizing the consequence of failure and building trust on their employees. Whereas 38.2% of the respondents agree with these and the remaining 18.2% are neutral. The implication is it is important to have top management with those qualities but in the office, there is no such structured top management support.

4.4.3. Project Plan Schedule

As the survey revealed, at average 48% of the respondents haven't received the project plan, they do not know which project activity slack time have, they haven't identified the skills required, they haven't involved in creating or operating performance measurement system, they do not know the availability of detailed project budget and they did not involve in selling the objective of the project to the clients. The other 29% of them have agreed with the availability and their involvement on the above issues and the remaining 22% which is significant percentage of them are neutral. The argument is the plan is a document in the library for most of the staff. Without having the plan at hand, it is difficult to supervise and lead the project towards success.

4.4.4. Client Consultation

The other most important success factor considered was client consultation. As the survey revealed 43.64% of the respondents strongly disagreed and disagreed that they understand they know the needs of the users, have discussed with the eventual clients, the clients are kept informed, they have solicited input from all potential clients. Other respondents (43.64%) have agreed on the consultation of clients on improving project performance and the other 12.7% are neutral. The implication is they believe in the involvement of clients but the office is not considering them in a visible way. The discussion with them confirms this argument that it is important to consult clients especially of project users but before the transfer of the houses it is difficult to consult them. But

other clients like the contractors, agencies in from the city administration and the federal structure have established arena for consultation.

4.4.5. Personnel

The personnel issues were the other category considered for measuring project success. As the survey revealed, above 53.64% of the respondents strongly disagreed and disagreed that their team included adequate technical and managerial kill, committed to the project's success, know how their performance will be evaluated, the line of authority is clearly defined, have enough power to complete the project, have clearly written job description, there is instilled motivational schemes and the personnel in the team understands their role in the project. Whereas the remaining 32% of the respondents agree with that and the others 13.64% of them are neutral.

4.4.6. Technical Tasks

The technical task aspect of the project was also considered as other measure of project success. The research revealed that around 48% of the respondents strongly disagreed and dis agreed that there is appropriate technology in the office, relevant stakeholders both internal and external have reviewed and criticized the project plan, they have alternative plans for the project, the results of the project are subjected to periodic adjustments, there are is a working technology and capable engineers, the people implementing the project understands it, specific tasks are well managed and there is integration with other projects. whereas others (40%) of the respondents agreed on the availability of the basic issues partially. The implication is there is a gap in equipping the office with skilled man power and coordination of the available staff. As the discussion held with them shown that there is a high political intervention on the project personnel selection especially at the top position.

4.4.7. Client Acceptance

The other most important component is the client acceptance. According to the survey result,56.36% of the respondents agreed that, potential clients have been contacted during the project initiation about the importance of the project, there is adequate documentation, there were presentations during project initiation, the clients know who to contact when problems arise, the

project team is adequately informed, there is coordination and all potential clients or project users have been identified. The other 42.73 doesn't agree with that and 15% of them are neutral. The implication is there is positive acceptance level by the clients.

4.4.8. Monitoring and Feedback

Monitoring and feedback were considered as other critical factors by the researcher. The research revealed that 43.64% of the respondents disagreed on there is regular progress review, sharing of review results, revision of schedule and costs based on the monitoring and feedback result, the reasons for changes are communicated and documented. Other 47.27% of the respondents agreed with that and the remaining 9% are neutral.

4.4.9. Communication

From the literature review communication is the other life cycle endeavor that must be considered throughout the project life. As this research revealed nearly 39% of the respondents disagreed that the reasons for changes are explained to the team, the project goals are defined and explained to the team and others affected by the project, individuals or groups supplying inputs have received feedback on the acceptance and rejection of their inputs, the results of planning meeting are published and distributed, exceptional report needs have been identified and issued, there exists well-defined channel of feedback from clients and others in need, all groups affected by the project know how to make problems known, there exists timely responses for complaints. Other respondents (38.2%) agreed with that and the remaining 22.73% which is very significant are neutral. The observation and discussion made with the communication department of the office confirmed the same results there is communication process which is not well organized, participatory and is limited to reporting and feedback system only.

4.4.10. Trouble Shooting

Trouble shooting was also considered as other component of critical success factors in the project implementation. According to the survey result around 57.27% of the respondents agreed on there is awareness of problem areas, have addressed problem areas by discussion, they follow the solution of the progress strategies, take immediate action when problems arise, they know exactly

where to go for assistance, they hold brainstorming session to determine where problems are most likely to occurs, there is comfort between team members during discussion, project team members are encouraged to take quick action on problems on their own initiative, they are confident problems that arise can be solved and they are not hesitant to enlist the aid of personnel not involved in the event of problems. The other 19 % disagreed on this and the remaining 20% are neutral.

4.5. RELATIONSHIP OR ASSOCIATIONS BETWEEN CSF

To assess the relationship between the identified CSF the researcher considered analyzing the relationship within each category and across categories correlation analysis was employed to see the relationship or associations across variables with 5% statistically significant level and correlation coefficient of greater than 0.5. Accordingly, based on their order of relevance the relationship within all of them shown that; there is a strong relationship with all other variables across categories at 5% statistically significant level.

As observed from the test using the commonly measurement approach which is Cochran's Chi-square test, the output shown 0.9 which is more than 0.7 and acceptable. According to Shahrzad and Hamidreza, (2011).

Pattern and component correlation analysis was employed to analyze the association within and between factors. At the statistically significant level of 5% it was observed that there is a strong relationship within and across variables with a Pearson correlation coefficient value of more than 0.5 at 5% significant level. Even though many researchers considered it is sufficient to consider a cut of point 0.35 at 5% significance level, this research took the best cut off point of 5%. Therefore, it is possible to deduce that, the factors identified as critical success factors were relevant to the office and have applicability. From the results of statistical analysis, there is a strong association between and across variables identified as cases in each item. The tables are presented based on their order of preference during questionnaire design and data collection. Accordingly, the first table shows the associations of cases in project mission within itself and with others and the second table presents the top management support factor, table three the project schedule/plan factor, table four the client consultation, table fie personnel, table six technical tasks, table seven client acceptance, table eight monitoring and feedback, table nine communication and table ten trouble shooting. Finally, the factor loading table and selection of the top five critical factors has been

presented. Numbers assigned 1to 100 implies the number of variables/ cases with their order of preference. Each factor has 10 cases as a determinant factor.

Table 4. 1: **Association with Project Mission**

	With Project Mission									
PROJECT MISSION	1	2	3	4	5	6	7	8	9	10
	.763**	.713*	.763**	.729*	.729*	.820**	.843**		.636*	
	.006	.014	.006	.011	.011	.002	.001		.035	
	With Top Mgt Support									
		11	13	14	15	16	18	19		
		.733*	.758**	.790**	.608*	.697*	.604*	.642*		
		.010	.007	.004	.047	.017	.049	.033		
				Plan						
			24	26	26	27				
			.644*	.758**		.601				
			.032	.007		.050				
	Client Consultation									
	31	32	33	35	36	37	38	39		
	.871**	.681*	.717*	.871**	.689*	.610*	.621*	.613*		
	.000	.021	.013	.000	.019	.046	.042	.045		
	Personnel									
	42	43	44	45	47	49	50			
	.785**	.707*	.642*	.636*	.714*	.757**	.670*			
	.004	.015	.033	.036	.014	.007	.024			
	Technical Tasks									
	52	54	56	57	58					
	.677*	.675*	.647*	.824**	.722*					
	.022	.023	.031	.002	.012					
	Client Acceptance									
	60	61	62	64	65	66	67	68	69	70
	.635*	.654*	.869**	.811**	.906**	.772**	.634*	.742**	.777**	.714*
	.036	.029	.001	.002	.000	.005	.036	.009	.005	.014
	Monitoring & Feedback									
	71	72	73	74	75	76	77	78	79	
	.679*	.690*	.694*	.615*	.624*	.649*	.617*	.662*	.683*	
	.021	.019	.018	.044	.040	.031	.043	.026	.020	
	Communication							Trouble Shooting		
	82	83	85	87	89			90	92	93
	.572	.649*	.621*	.675*	.755**			.862**	.634*	.751**
	.066	.031	.041	.023	.007			.001	.036	.008

Note: The numbers at the middle are correlation coefficients and at the bottom are the Sig. level

As shown in the above table project mission has strong relationship within its sub components, top management support, client consultation, client acceptance, and with the seven components of the top management support items, with three sub items of project plan and monitoring and feedback sub components and has strong relation with at least three sub components of personnel, technical tasks and trouble shooting at 5%statistically significant level with correlation coefficient of greater than 0.5. Therefore, it is possible to deduce that project mission has strong relationship with other all factors.

Table: 4.2 The association with Top management support

TOP MGT SUPPORT										
Project mission										
1	4	5	6	7	9					
.608*	.613*	.790**	.764**	.608*	.733*					
.047	.045	.004	.006	.047	.010					
Top Mgt Support										
11	13	14	15	16	17	18	19	20		
.681*	.681*	.822**	.692*	.633*	.661*	.762**	.710*			
.021	.021	.002	.018	.037	.027	.006	.014			
Plan				**Client Consultation**						
24	26	29	30	32	33	39	40			
	.548	.616*	.607*	.601	.629*	.659*	.733*			
	.081	.044	.048	.051	.038	.027	.010			
Personnel				**Technical Tasks**						
41	45	46	48	53	54	57	59			
.640*	.721*	.748**	.705*	.786**	.684*	.910**	.620*			
.034	.012	.008	.015	.004	.020	.000	.042			
Client Acceptance										
61	62	63	64	65	66	67	68	69	70	
.804**	.788**	.633*	.701*	.711*	.711*	.701*	.657*	.729*	.820**	
.003	.004	.037	.016	.014	.014	.016	.028	.011	.002	
Monitoring & Feedback										
71	73	74	75	76	77	78	79	80		
.647*	.668*	.639*	.654*	.616*	.746**	.657*	.753**	.794**		
.031	.025	.034	.029	.044	.008	.028	.007	.004		
Communication				**Trouble Shooting**						
81	84	85	86	90	96	98	99	100		
.629*	.720*	.796**	.727*	.707*	.622*	.620*	.614*	.602		
.038	.012	.003	.011	.015	.041	.042	.044	.050		

As shown from the table 2, top management support has strong relations with six sub components of project mission, none sub components of project mission, four sub components of project plan & technical tasks, ten sub components of client acceptance & monitoring and feedback, five components of communication and trouble shooting. Therefore, it is possible to deduce that there is strong relation with all other factors.

Table 4.3 The association with Project schedule/plan

PROJECT SCHEDULE/PLAN								
Pmission								
2	5	6	7					
.601	.758**	.660*	.644*					
.050	.007	.027	.032					
Top management Support								
12	13	16	17	18				
.607*	.616*	.695*	.702*	.595				
.048	.044	.018	.016	.054				
Project Plan								
21	22	24	25	26	28	29	30	
.824**	.824**	.659*	.620*	.659*	.690*	.620*	.709*	
.002	.002	.028	.042	.028	.019	.042	.015	
Cleint Consultation								
31	32	34	35	37	38	40		
.670*	.606*	.647*	.670*	.732*	.741**	.687*		
.024	.048	.032	.024	.010	.009	.020		
Personnel								
42	43	45	47	49	50			
.707*	.682*	.686*	.749**	.611*	.702*			
.015	.021	.020	.008	.046	.016			
Technical Tasks								
52	53	54	55	58	59	60		
.833**	.806**	.768**	.654*	.623*	.623*	.713*		
.001	.003	.006	.029	.041	.041	.014		
Client Acceptance			**M&F**		**Trouble shooting**			
63	64	68	84	88	90	91		
.646*	.608*	.668*	.655*	.607*	.704*	-.607*		
.032	.047	.025	.029	.048	.016	.048		

The table above shows the association of project schedule/plan with other factors. It has strong relation with ten sub components of personnel, client consultation, technical tasks, with project plan, five sub components of top management support, four sub components of project mission, and three and more sub components of monitoring and feedback and trouble shooting. But it has no strong relation with client acceptance and communication. The logic of weak relation with client acceptance is mostly clients accept the out puts of the project and communication during planning mainly focuses on identification of the needs. Therefore, it is possible to conclude that the relationship with all the other factors is strong.

Table 4.4 The association with client consultation

CLIENTINVOLVEMENT

Project Mission

4	5	6	8	9	10
.610*	.717*	.613*	.655*	.681*	.871**
.046	.013	.045	.029	.021	.000

Top Management Support

11	14	18
.659*	.629*	.748**
.027	.038	.008

Plan

22	23	27	28	29
.742**	.670*	.687*	.608*	.606*
.009	.024	.020	.047	.048

Client Consultation

31	32	33	34	35	36	37	38	39
.617*	.617*	.631*	.640*	.617*	.731*	.680*	.753**	.740**
.043	.043	.037	.034	.043	.011	.021	.007	.009

Personnel

42	43	44	45	46	47	48	50
.688*	.714*	.651*	.883**	.669*	.742**	.608*	.761**
.019	.014	.030	.000	.024	.009	.047	.007

Technical Tasks

52	54	56	57	58	59	60
.664*	.633*	.752**	.557	.595	.721*	.630*
.026	.037	.008	.075	.054	.012	.038

Cleint Acceptance

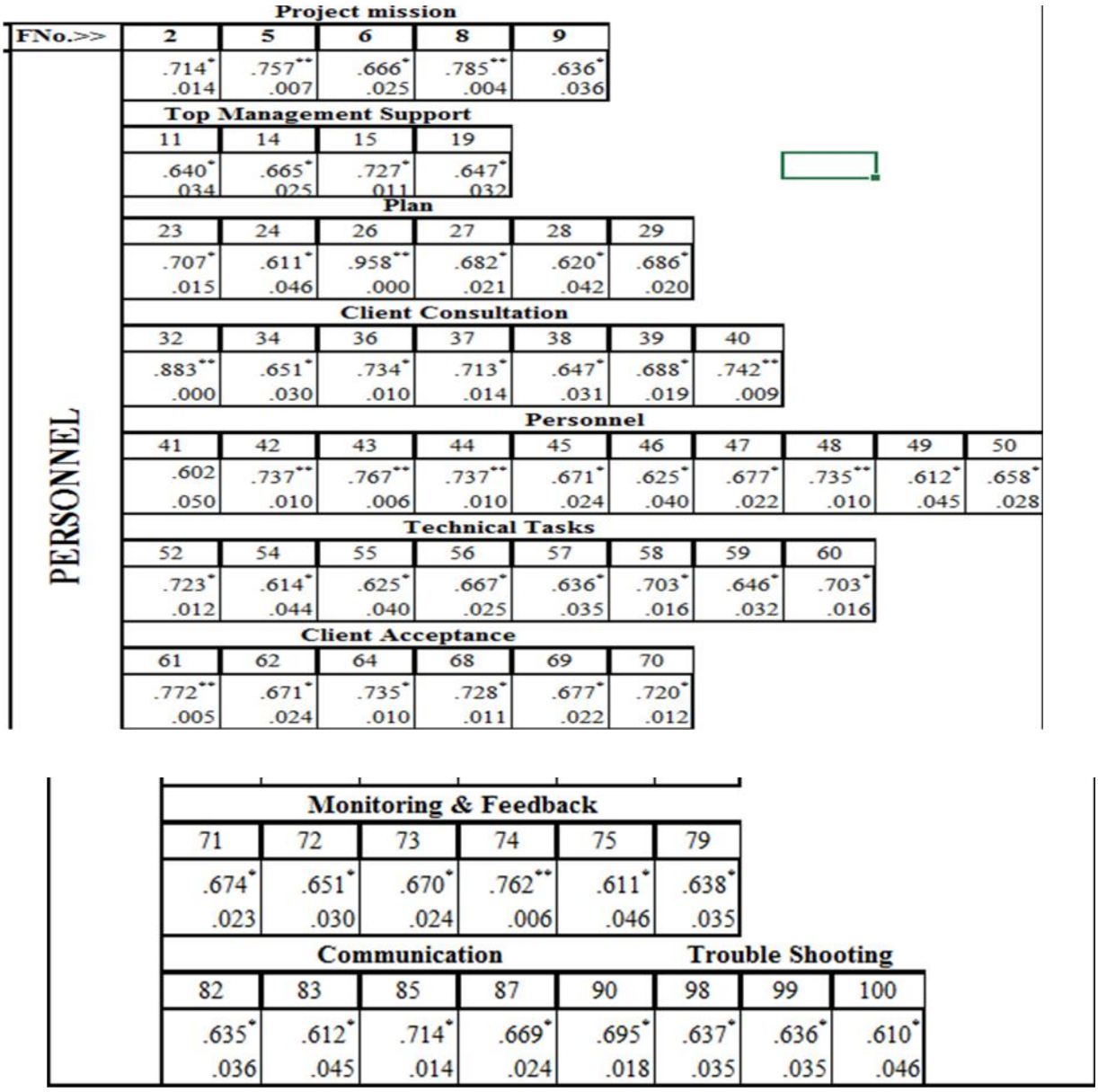
61	62	64	65	66	67	68	69
.813**	.861**	.802**	.620*	.738**	.774**	.616*	.644*
.002	.001	.003	.042	.009	.005	.044	.032

M&F **Communication** **Trouble shooting**

71	72	73	74	82	87	89	96
.673*	.646*	.613*	.670*	.801**	.633*	.687*	-.640*
.023	.032	.045	.024	.003	.037	.020	.034

As shown from the above table clients consultation has strong association at least with more than six sub components of project mission, project plan, client consultation, personnel, technical tasks, client acceptance, and monitoring and feedback. It has also associations with project mission, top management support, communication and trouble shooting.

Table 4.5 Association with personnel



	Project mission				
FNo.>>	2	5	6	8	9
PERSONNEL	.714* .014	.757** .007	.666* .025	.785** .004	.636* .036

Top Management Support			
11	14	15	19
.640* .034	.665* .025	.727* .011	.647* .032

Plan					
23	24	26	27	28	29
.707* .015	.611* .046	.958** .000	.682* .021	.620* .042	.686* .020

Client Consultation						
32	34	36	37	38	39	40
.883** .000	.651* .030	.734* .010	.713* .014	.647* .031	.688* .019	.742** .009

Personnel									
41	42	43	44	45	46	47	48	49	50
.602 .050	.737** .010	.767** .006	.737** .010	.671* .024	.625* .040	.677* .022	.735** .010	.612* .045	.658* .028

Technical Tasks							
52	54	55	56	57	58	59	60
.723* .012	.614* .044	.625* .040	.667* .025	.636* .035	.703* .016	.646* .032	.703* .016

Client Acceptance					
61	62	64	68	69	70
.772** .005	.671* .024	.735* .010	.728* .011	.677* .022	.720* .012

Monitoring & Feedback					
71	72	73	74	75	79
.674* .023	.651* .030	.670* .024	.762** .006	.611* .046	.638* .035

Communication				Trouble Shooting			
82	83	85	87	90	98	99	100
.635* .036	.612* .045	.714* .014	.669* .024	.695* .018	.637* .035	.636* .035	.610* .046

Project personnel has strong relation with more than five sub-components of project mission, project plan, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback and communication and has relations with four sub components of top management support and trouble shooting. The implication is there is strong relationship within a and between the identified critical factors identified at 5% statistically significant level and with correlation coefficient of more than 0.5.

Table 4.6 Association with technical Tasks

	Pmission								
Fno.>>	4	5	6	9					
TECHNICAL TASKS	.677* .022	.647* .031	.719* .013	.614* .044					
	TMSupport								
	11	13	14	15	17	18	19		
	.684* .020	.712* .014	.646* .032	.685* .020	.786** .004	.783** .004	.778** .005		
	Plan								
	21	22	24	26	27	28	29	30	
	.833** .001	.620* .042	.646* .032	.654* .029	.768** .006	.646* .032	.684* .020	.709* .015	
	Client Consultation								
	32	33	34	36	37	38	39		
	.664* .026	.796** .003	.721* .012	.859** .001	.851** .001	.631* .037	.644* .032		
	Personnel								
	42	43	44	45	46	47	48	49	50
	.625* .040	.703* .016	.643* .033	.667* .025	.818** .002	.663* .026	.822** .002	.709* .015	.618* .043
	Technical Tasks								
	52	53	54	55	56	57	58	59	60
	.806** .003	.729* .011	.639* .034	.639* .034	.729* .011	.729* .011	.729* .011	.758** .007	.703* .016
	Client Acceptance								
	61	62	64	65	66	68	69	70	
	.839** .001	.809** .003	.893** .000	.610* .046	.608* .047	.610* .046	.735* .010	.744** .009	
	Monitonng & Feedback								
	71	72	73	74	75	77	80		
	.761** .007	.722* .012	.602 .050	.871** .000	.717* .013	.625* .040	.648* .031		
	Communication						Trouble Shooting		
	82	83	85	86	87	90	95	96	97
	.670* .024	.689* .019	.684* .020	.668* .025	.636* .036	.614* .044	-.607* .048	-.635* .036	.778** .005

As shown from the above table technical tasks has strong relation with more than six sub components of top management support, project plan, client consultation, personnel, technical tasks, client acceptance monitoring and feedback and communication. It also has strong relations with four sub components of project mission and trouble shooting. This more generally refers to technical tasks has strong relation with all other critical factors identified.

Table 4.7 Association with client acceptance

	Project mission									
	4	5	6	7	9	10				
	.906** .000	.654* .029	.722* .012	.713* .014	.795** .003	.602 .050				
	Top Mgt Support									
	11	13	14	15	16	17	18	19		
	.804** .003	.744** .009	.708* .015	.662* .027	.586 .058	.663* .026	.719* .013	.637* .035		
	Plan				Client Consultation					
	24	26	32	33	34	36	37	38	39	40
	.646* .032	.608* .047	.813** .002	.827** .002	.701* .016	.890** .000	.626* .039	.683* .021	.731* .011	.774** .005
CLIENT ACCEPTANCE	Personnel									
	44	45	46	48	49	50				
	.671* .024	.772** .005	.623* .041	.646* .032	.612* .045	.618* .043				
	Technical Tasks									
	51	52	53	54	56	57	60			
	.610* .046	.816** .002	.608* .047	.758** .007	.816** .002	.839** .001	.750** .008			
	Client Acceptance									
	61	62	63	64	65	66	67	68	69	70
	.772** .005	.772** .005	.658* .028	.888** .000	.776** .005	.684* .020	.671* .024	.761** .007	.716* .013	.894** .000
	Monitoring & Feedback									
	71	72	73	74	75	76	77	78	79	80
	.716* .013	.637* .035	.919** .000	.875** .000	.546 .082	.516 .104	.685* .020	.882** .000	.530 .093	.670* .024
	Communication									
	81	82	83	85	86	87	88	89	90	
	.647* .031	.752** .008	.818** .002	.682* .021	.727* .011	.754** .007	.684* .020	.590 .056	.877** .000	
	Trouble Shooting									
	92	93	94							
	.700* .016	.705* .015	.657* .028							

As shown from the table below client acceptance has at least with more than six sub components of all other factors except with three sub components of trouble shooting.

Table 4.8 Association with Monitoring and Feedback

As shown from the table below monitoring and feedback has strong association with at least six sub components of all other factors except with client consultation. There is weak relation with client involvement. The association reported herein is the sub components with more than correlation coefficient of more than 0.5 at statistically significant level.

MONTORING & FEEDBACK	**Project mission**									
	1	2	3	4	5	6	7	9		
	.622* .041	.703* .016	.622* .041	.665* .026	.679* .021	.850** .001	.628* .039	.673* .023		
	Top Mgt Support									
	11	13	14	15	16	17	18	19		
	.647* .031	.616* .044	.668* .025	.764** .006	.704* .016	.794** .004	.705* .015	.729* .011		
	C Co			**Personnel**						
	39	40	45	46	48	50				
	.613* .045	.673* .023	.674* .023	.670* .024	.639* .034	.611* .046				
	Technical Tasks									
	52	53	54	56	57	58				
	.719* .013	.602 .050	.839** .001	.761** .007	.724* .012	.722* .012				
	Client Acceptance									
	61	62	63	64	65	66	67	68	69	70
	.716* .013	.674* .023	.647* .031	.668* .025	.832** .001	.919** .000	.668* .025	.613* .045	.735* .010	.931** .000
	Monitoring & Feedback									
	71	72	73	74	75	77	78	79		
	.965** .000	.965** .000	.926** .000	.926** .000	.775** .005	.759** .007	.608* .047	.757** .007		
	Communication									
	81	82	83	84	85	86	87	88	89	90
	.775** .005	.738** .009	.879** .000	.628* .039	.746** .008	.610* .046	.606* .048	.636* .035	.681* .021	.828** .002
	Trouble Shooting									
	92	93	97	98	99	100				
	.617* .043	.607* .048	.636* .036	.599 .052	.609* .047	.623* .041				

The remaining two factors are also having similar pattern of relationship with their counter parts. Therefor the researcher left them out.

4.6. THE CRITICAL SUCCESS FACTORS

The top critical success factors were selected based on their correlation coefficient value. The researcher used exploratory factor analysis of principal component analysis to reduce the amount of data to be used and subsequently to determine the number and character of underlying or latent factors in a data set. Nunnally (1978) recommends a 10 to 1 ratio: that is, 10 cases for each item to be factor analyzed is sufficient. Others suggest that 5 cases for each item is adequate in most cases. This research has 11 sample size and 10 cases and 10 sub items for each case and the cross factor loading of each factor at significance level of 5% are selected and summarized in the table below. The extraction was done using principal component analysis with correlation matrix with means and standard deviation for each variable included in the analysis and both structure and pattern matrix were considered for rotation which is advisable for such small sample sizes and categorical variables. Since the intent of the research was to assess whether there is any association between the factors identified as well as identifying the critical factors, the rotation was done using direct Oblimin with Delta value of 0. Finally, factor loading plots were used to identify the top five critical factors subjectively. The cut-off points were determined to be values greater than 0.7 while most researchers recommended 0.3 and above as acceptable.

Table 4.9 Factor Loading

	Component Matrix[a]				
S/N		Component			
		1	2	3	4
Project Misssion	Upper management shared the same basic goal of the project	0.887			
	All other managers at my level involved in the project foresee the same beneficial consequences	0.844			
	The project goals have been explained to all personnel affected by the project	0.754			
Top Management Support	Upper management understands the amount of resources required to implement the project	0.749			
	I agree with upper management on the degree of my authority and responsibility for the project	0.836			
	Upper management will support me in a crisis	0.821			
	Upper management understands the amount of resources required to implement the project	0.749			
	I agree with upper management on the degree of my authority and responsibility for the project	0.836			
	Upper management will support me in a crisis	0.821			
	Upper management shares the responsibility for ensuring the project success	0.705			
	I have confidence of upper management	0.72			

Project Plan	I have received a detailed plan for completion of the project			0.8	
	The structure of the project team has been developed with specific lines of authority and responsibility	0.702			
	I have "sold" the schedule to the key personnel in the project			0.7	
Client Consultation	The clients were told whether or not their inputs were assimilated into the project plan	0.736			
	I have solicited input from all potential clients of the project	0.836			
Personnel	The lines of authority and communication are well defined on my project team	0.754			
	Job descriptions for the team members have been written and distributed and are understood	0.726			
	My project team members are motivated by adequate rewards for project success	0.721			
	My project team personnel understand their role on the project team	0.733			
Technical Tasks	Experts, consultants, other experienced project managers outside the project team have reviewed and criticized my basic plans/approaches	0.76			
	I have considered alternative plans/approaches for the project			0.7	
	The results of the project are subject to periodic adjustment "fin-tuning	0.839			
	The people implementing this project understand it	0.766			
	Specific tasks are well managed	0.767			
Client Acceptance	Adequate advanced preparation has been done to determine how best to "sell" the project to clients	0.74			
Monitoring and Feedback	When the budget and schedule require revision, I solicit input from the project team	0.846			
	When the budget or schedule is revised, the changes and the reason for the changes are communicated to all members of the project team	0.826			
	When the budget or schedule is revised, the changes and the reasons for the changes are communicated to clients		0.786		
	I conduct regular meetings to monitor project progress and improve the feedback to the project team		0.709		
Communication	The project goals have been well defined and explained to members of the project team, other groups affected by the project upper management	0.746			
	The results of planning meetings are published and distributed to applicable personnel	0.738			
	I expect problems and complaints to receive timely responses	0.831			
Trouble Shooting	I take immediate action when problems come to my attention		0.784		
	I "hold brainstorming" sessions to determine where problems are most likely to occur		0.718		
	Project team members feel comfortable discussing problems with me				0.702

Extraction Method: Principal Component Analysis.[a]
a. 25 components extracted.

As it is possible to see from the table above except top management support which has contributed eight sub-components more than 0.72, all other factors have contributed more than three sub components with coefficient value of more than 0.72.

CHAPTER FIVE: CONCLUSSION & RECOMMENDATIONS

5.1. CONCLUSSION

The findings of this study are based on a survey done at Addis Ababa Housing Development project office. The project office is managing projects using traditional project management practices and the success criteria considered as a measure of success are entirely extraneous to project management practices. The respondents in this study strongly indicated that top management support, skilled personnel, understanding the project plan and sharing of the project goal, client involvement during project planning, strong monitoring and feedback, proactive trouble shooting and effectiveness of communication system is very important for successful implementation of the project. The findings support the critical success factors and their contribution to successful implementation of projects. The study results also shown that understanding project mission, top management support, understanding the project plan, client consultation, monitoring and feedback poor communication are poorly understood and managed so that they negatively influenced successful implementation of the project.

The findings of this study also shown that availability of personnel, capability to carryout technical tasks, client acceptance of the product and troubleshooting measures in the office are fairly understood and managed so that they positively influenced successful implementation of condo projects. The study found out that the project leaders are committed to successful implementation of the projects. There is statistically significant strong association between the identified critical factors within and between categories.

Finally, based on subjective judgement of the researcher and the review of other research works, the categories with greater item numbers and with greater coefficient are selected as the top critical factors. Accordingly, top management support, personnel, technical tasks, monitoring and feedback and communication were selected as the top five critical factors in the project office.

5.2. RECOMMENDATIONS

The study makes the following recommendations that will enhance the successful implementation of the condo projects;

- The top management support is very crucial in successful implementation of the condo projects. The roles the top management plays during project implementation greatly affect the overall success of project and should be taken seriously. This should be standardized to all projects to make sure all project gets equal or relatively the same attention from the top management. The organization that carries out its functions through different projects should have an organization structure that supports these projects. The adoption of project friendly structure will keenly consider projects and success rate of project will be high and within the time limit given to each project. It is important for the office structure to have project related structure on which the screening and recruitment of personnel and the decision-making process could be carried out.
- The planning model, the communication, stakeholders' management, monitoring and feedback, troubleshooting system and practice are poorly organized. Therefore, the office has to adapt itself with emerging changes.
- The communication channels that deliver the information at the shortest time which are reliable, effective and efficient should be used for easier and faster communication of issues concerning projects. The bureaucracy of communication which takes long and it's not effective should be done away with and embrace the faster and effective way of communication. The project leader needs to have skills and knowledge that would help him/her in leading the project. His/her characteristics and performance depend on the skills and knowledge and experience in projects leadership.
- The projects leaders should be offered indoor training to enhance their project management skills. Procurement of project consumables is a very important aspect of the success of projects. The top management should have checks and control of procurements procedures to enhance its effectiveness.
- Finally, the top management should have to manage those critical project management critical success factors with curiosity and flexibility to bring fast-track changes.

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APPENDIXES

Instruction: Select the best possible answer. Please answer all the questions to the best of your knowledge. The number in brackets indicates the points awarded for the option.)

I.General Information

1. Your age
   ☐ 24 or Under
   ☐ 25 to 40
   ☐ 41 to 50
   ☐ Above 50 Years old
2. Educational background
   ☐ Diploma
   ☐ First degree
   ☐ MA
   ☐ Above
3. Number of years of project management experience
   ☐ Less than two years
   ☐ 2 to 5
   ☐ 6 to 10
   ☐ 11 to 15
   ☐ 16 to 20
   ☐ Greater than 20 years
4. Do you have formal project management training/course?
   ☐ Yes
   ☐ No

   If yes what of type of training did you have?

   _____

   _____

   What are commonly used project management practices adopted by the project office?

   _____

   _____

   _____

5. Do you have any project management success criteria to determine the success or failure of projects?

   Yes ☐ No ☐

   If your answer is yes, what are they?

   _____

   _____

   _____

II. The main factors positively or negatively affecting project management success

Think of the project implementation you have just named. Consider the statements on the following pages. Using the scale below, rate each statement according to the degree to which you agree with the statement as it concerns your project. A rating of 5 indicates that the statement is neutral and you neither agree nor disagree. A rating of above 5 indicates agreement with that statement as it concerns your implementation. A rating below 5 indicates disagreement with the statement.

PROJECT SITE_____ **JOB POSITION**_____

Strongly Disagree			**Disagree**		**Neutral**		**Agree**			**Strongly Agree**
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

Factor 1: PROJECT MISSION		
Sub-Factors		**Rating**
1	The basic goals of the project are clear to me	
2	When the project goals are achieved. the results will benefit the organization.	
3	I am aware of and can identify the beneficial consequences to the organization of the successful project.	
4	Other managers at my level share the basic goals of the project that we hold.	
5	Upper management shares the same basic goals of the project.	
6	All other managers at my level involved in the project foresee the same beneficial consequences.	
7	I am enthusiastic about the chances for success of this project.	
8	The project goals are not contradictory; they basically can all be achieved	
9	The project goals have been explained to all personnel affected by the project.	
10	The goals of this project are in line with the general goals of the organization.	
	Factor 1 - Project Mission Total	
FACTOR 2 -TOP MANAGEMENT SUPPORT		
Sub-Factors		
1	Upper management understands the amount of resources (money, time, manpower, equipment, etc.) required to implement this project.	
2	Upper management is provided with regular feedback concerning the progress of the project.	
3	Upper management has issued their support of the project, in writing, to all managers and organizational members affected by the project	

4	I agree with upper management on the degree of my authority and responsibility for the project.	
5	Upper management will support me in a crisis.	
6	Upper management has granted me the necessary authority and will support my decisions concerning the project.	
7	Upper management will be responsive to my requests for additional resources, if the need arises.	
8	Upper management shares the responsibility for ensuring the project success	
9	I have the confidence of upper management	
10	Upper management recognizes the negative consequences of an unsuccessful implementation	
Factor 2 - Top Management Support Total		

Strongly Disagree			**Disagree**		**Neutral**		**Agree**			**Strongly Agree**
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

Factor 3: PROJECT SCHEDULE/PLAN		
Sub-Factors		**Rating**
1	I have received a detailed plan (including time schedules, milestones, manpower requirements, equipment requirements, etc.) for completion of the project	
2	I know which project activities contain slack time or slack resources which can be utilized in other areas during emergencies	
3	I have identified the important manpower skills required for successful project completion.	
4	I have developed a satisfactory measurement system through which I can judge performance against budget and schedule.	
5	I possess an information system which will provide timely reports of the selected performance measures.	
6	The structure of the project team has been developed with specific lines of authority and responsibility	
7	There is a detailed budget for the project	
8	Key personnel needs (who, when) are specified in the project plan.	
9	I have contingency plans in case the project is off schedule.	
10	I have "sold" the schedule to the key personnel in the project.	
Factor 3 - Project Schedule/Plan Total		
FACTOR 4 - CLIENT CONSULTATION		
Sub-Factors		**Rating**
1	I understand the needs of those who will use the project.	
2	I have discussed the value of the project with the eventual clients	
3	The project is designed to accomplish the clients' needs.	

4	I have discussed the limitations of the project with the clients (what the project is not designed to do).	
5	The clients are kept informed of the project's progress.	
6	The clients are kept informed of specific implementation problems that will affect the output of the project	
7	The clients know they were given an opportunity to provide input early in the project development stage.	
8	The clients were told whether or not their input was assimilated into the project plan	
9	I have solicited input from all potential clients of the project	
10	Clients know who to contact in case of questions or misunderstandings at all phases of the implementation process	
Factor 4 - Client Consultation Total		

Strongly Disagree			**Disagree**		**Neutral**		**Agree**			**Strongly Agree**
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

FACTOR 5 - PERSONNEL		
Sub-Factors		**Rating**
1	My project team includes personnel with adequate technical and managerial skills.	
2	Adequate technical and/or managerial training (and time for training) is available for members of my project team.	
3	The personnel on my project team are committed to the project's success.	
4	The members of my project team understand how their performance will be evaluated	
5	I have a list of internal and/or external consultants who can be brought in if crises develop	
6	The lines of authority and communication are well defined on my project team.	
7	I have enough manpower to complete the project.	
8	Job descriptions for team members have been written and distributed and are understood	
9	My project team members are motivated by adequate rewards for project success	
10	My project team personnel understand their role on the project team.	
Factor 5 - Personnel Total		
FACTOR 6 - TECHNICAL TASKS		
Sub-Factors		**Rating**
1	The appropriate technology (equipment, training programs, etc.) has been selected for project success.	

2	Experts, consultants, other experienced project managers outside the project tearm have reviewed and criticized my basic plans/approach.	
3	I have considered alternative plans/approaches for the project.	
4	The results of the project are subject to periodic adjustment and "fine-tuning	
5	The technology that is being implemented works well.	
6	The engineers and other technical people are capable.	
7	The people implementing this project understand it	
8	Specific tasks are well managed	
9	I understand how this project may be integrated with other current projects (personnel, time schedules, etc)	
10	The personnel understand their specific tasks for the project.	
Factor 6 - Technical Tasks Total		

Strongly Disagree			**Disagree**		**Neutral**		**Agree**			**Strongly Agree**
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
FACTOR 7 - CLIENT ACCEPTANCE										
Sub-Factors										**Rating**
1	Potential clients have been contacted about the usefulness of the project									
2	An adequate presentation of the project has been developed for clients.									
3	Trial presentations have been conducted for a few selected clients.									
4	There is adequate documentation of the project to permit easy use by clients (instructions, etc.).									
5	The clients know who to contact when problems or questions arise									
6	The project team is organized so that client problems or questions can be fed back to the team for corrective action									
7	The project team is adequately informed of the project's progress so they can keep clients informed.									
8	The project team is coordinating with other departments to assist in meeting clients' demands									
9	All potential clients or project users have been identified									
10	Adequate advanced preparation has been done to determine how best to "sell" the project to clients.									
Factor 7 - Client Acceptance Total										

FACTOR 8 - MONITORING AND FEEDBACK										
Sub-Factors										**Rating**
1	I regularly compare actual progress against the project schedule.									
2	I share the results of these reviews with project personnel who have impact upon the budget and schedule.									
3	When the budget or schedule requires revision, I solicit input from the project team.									
4	When the budget or schedule is revised, the changes and the reasons for the changes are communicated to all members of the project team									
5	When the budget or schedule is revised, the changes and the reasons for the changes are communicated to upper management.									
6	All members of the project team know if I am satisfied/dissatisfied with their work									
7	I am monitoring all important aspects of the project, including measures that will provide a complete picture of the project's progress (adherence to budget, manpower and equipment utilization, adherence to schedule, market passion, project team image, project team morale, client and public relations, personnel, training and development, innovation and research, information systems).									
8	When the budget or schedule is revised, the changes and the reasons for the changes are communicated to clients.									
9	I conduct regular meetings to monitor project progress and improve the feedback to the project team.									
10	All members of the project team are kept informed of the status of the project									
Factor 8 - Monitoring and Feedback Total										
Strongly Disagree			**Disagree**		**Neutral**		**Agree**			**Strongly Agree**
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
FACTOR 9 - COMMUNICATION										
Sub-Factors										**Rating**
	The reasons for any changes to existing policies/procedures have been explained to members of the project team, other groups affected by changes, upper management.									
	The project goals have been well defined and explained to members of the project team, other groups affected by project work, and upper management									
	Input concerning project goals and strategy has been sought from members of the project team, other groups affected by the project, and upper management									

	Individual/groups supplying input have received feedback on the acceptance or rejection of their input	
	The results (decisions made, information received and needed, etc) of planning meetings are published and distributed to applicable personnel	
	I have provisions for issuing exception reports -who is responsible for recognizing the need for exception reports, who will write them, who will receive them, etc.	
	There exist well-defined channels for feedback from clients, upper management, members of other groups, and project team members when project implementation begins	
	All groups affected by the project know how to make problems known to me.	
	Someone has been designated to receive complaints and channel them to individuals who can take corrective action.	
	I expect problems and complaints to receive timely responses.	
Factor 9 - Communication Total		
FACTOR 10 - TROUBLE-SHOOTING		
Sub-Factors		**Rating**
1	I am aware of project "problem areas"	
2	I have addressed "problem areas" by discussing them with appropriate personnel and identifying a solution strategy	
3	I am following the progress of the solution strategies in all “problem areas":	
4	I take immediate action when problems come to my attention.	
5	In case of project difficulties, I know exactly where to go for assistance	
6	I hold "brainstorming" sessions to determine where problems are most likely to occur.	
7	Project team members feel comfortable discussing problems with me.	
8	Project team members are encouraged to take quick action on problems on their own initiative	
9	I am confident that problems that arise can be solved quickly and completely.	
10	I am not hesitant to enlist the aid of personnel not involved in the project in the event of problems.	
Factor 10 - Trouble-shooting Total		

Thank You for Your Cooperation!!!